TRANSACTIONS

OF THE

NINTH ANNUAL MEETING

OF THE

WESTERN

SURGICAL AND GYNECOLOGICAL

ASSOCIATION

HELD AT

Des Moines, Iowa, December 27 and 28, 1899

LINCOLN, NEB.
WESTERN MEDICAL REVIEW PUBLISHING CO.
1900

P

UNIV OF CALIF
MEDICAL SCHOOL

OFFICERS FOR 1900.

President—O. Beverly Campbell, M. D., St. Joseph, Mo.

First Vice-President—A. C. Bernays, M. D., St. Louis, Mo.

Second Vice-President—J. R. Hollowbush, M. D., Rock Island, Ill.

Secretary-Treasurer—Geo. H. Simmons, M. D., 61 Market Street, Chicago, Ill.

EXECUTIVE BOARD.

H. C. Crowell, M. D., Chairman, Kansas City, Mo.
Lewis Schooler, M. D., Des Moines, Ia.
John Prentiss Lord, M. D., Omaha, Neb.
J. E. Moore, M. D., Minneapolis, Minn.
M. L. Harris, M. D., Chicago, Ill.

The Western Surgical and Gynecological Association does not hold itself responsible for, or necessarily endorse, any of the papers printed herein.

George H. Simmons,
Secretary-Treasurer.

UNIV OF CALIF
MEDICAL SCHOOL

CONTENTS.

PAGE

TRANSACTIONS 5

PAPERS AND DISCUSSIONS—

President's Address—Some Things—H. C. Crowell, M. D., Kansas City, Mo 13

Surgical Diseases of the Biliary Passages—Byron B. Davis, M. D., Omaha, Neb 23

Discussion 34

How to Prevent and How to Treat Ununited Fractures—A. C. Bernays, M. D., St. Louis, Mo 44

Discussion 47

Acute Suppurative Arthritis of Children—James E. Moore, M. D., Minneapolis, Minn 53

Discussion 61

A Contribution to the Surgery of the Common Bile-Duct: Report of a Case of Choledochenterostomy—John E. Summers, Jr., M. D., Omaha, Neb 65

Discussion 69

The Vaginal Route—O. Beverly Campbell, A. M., M. D., St. Joseph, Mo 73

Discussion 79

Notes on the X-Ray: Its Usefulness and Mistakes—J. Rudis-Jicinsky, A. M., M. D., Cedar Rapids, Ia 87

Discussion 92

The Longitudinal Wire Suture in the Radical Operation for Hernia—M. L. Harris, M. D., Chicago, Ill 97

Discussion 103

Oophorectomy for Grave Functional Nervous Diseases Occurring During Menstruation—D. C. Brockman, A. M., M. D., Ottumwa, Ia 104

Discussion 111

Cystosarcoma Occurring Simultaneously in Both Ovaries—Van Buren Knott, M. D., Sioux City, Ia 118

Discussion 122

A Case of Cystic Teratoma Complicated with Hemorrhage—E. Hornibrook, M. D., Cherokee, Ia 125

Discussion 129

8725

PAPERS AND DISCUSSIONS—*Concluded.* PAGE

Congenital Hip-Joint Displacements—John Prentiss Lord, M. D., Omaha, Neb 130
Discussion 137

Surgery in Relation to Persons of Advanced Age—Milo B. Ward, M. D., Kansas City, Mo 140

A Case of Fibroma Uteri—D. W. Basham, M. D., Neal, Kan. 144

Acute Osteomyelitis—(Syn.) Acute Infective Panosteitis—Charles C. Allison, M. D., Omaha, Neb 151
Discussion 157

What Should Be Our Treatment of Fractures of the Anatomical Neck of the Humerus Complicated by a Dislocation of the Head?—W. Jepson, B. S., M. D., L. R. C. S. (Ed.), Sioux City, Ia 159
Discussion 166

Hematoma of the Vulva and Vagina—A. L. Wright, M. D., Carroll, Ia 168

Gastroenterostomy in Carcinomatous Obstruction of the Pylorus—Gilbert Geoffrey Cottam, M. D., Rock Rapids, Ia 178
Discussion 182

Constitution and By-Laws 187

TRANSACTIONS.

FIRST DAY—MORNING SESSION.

The association met in the Knights of Pythias Hall, and was called to order at 10 A. M. by the president, Dr. H. C. Crowell, of Kansas City, Mo.

The president called on Dr. J. W. Cokenower, of Des Moines, to deliver an address of welcome, when Dr. Cokenower arose and said: "Mr. President, I would like to transfer that duty to my friend Dr. Schooler, who is a better talker than I am." Dr. Lewis Schooler said:

ADDRESS OF WELCOME.

"The address of welcome will consist of an apology on the part of Dr. Smouse, who is chairman of the committee of arrangements, and has been detained somewhere between here and the western part of the state, consequently the other members of the committee have not been in communication with him. Our arrangements, therefore, have been somewhat disarranged on that account.

"We are all exceedingly glad to see you here, like the fellow who addressed the convicts of the penitentiary, and while at this opening session the attendance is small, I am sure it will be materially augmented by noon. After we once get started, there will be enough present to make a good meeting. I am glad to see a number of gentlemen present from neighboring cities and states. I think it is encouraging to know that we have some members from cities and states that have not heretofore been considered as within the territory of this society. However, our society is not limited by any fast and hard lines, and I am glad to see that interest in our work is spreading beyond the limits of

Kansas City, Des Moines, even Omaha, represented this morning, and some other cities farther away. We hope the noon train will bring in a larger delegation from Omaha, Kansas City, and other places. Gentlemen, the city of Des Moines is yours and all that it contains." [Applause.]

Dr. B. B. Davis, of Omaha, was asked to respond to the address of welcome. Dr. Davis said:

RESPONSE TO ADDRESS OF WELCOME.

"MR. PRESIDENT AND GENTLEMEN: I think the reason the president has asked me to respond to the address of welcome is because I cannot talk; but nevertheless all of us appreciate being here in Des Moines with Dr. Schooler and the other Des Moines surgeons. We appreciate it particularly on account of the fact that the school teachers of the state are meeting here at the same time. I am very sorry that we have not a larger attendance at this opening session, but we can rest assured that the number will be very much increased before noon.

"The meetings of this association in the past have always been heartily entered into by the members, and I think those of us who have been members of the association from its incipiency feel that we are not only growing in numbers, but in the matter of the scientific value of papers. Our meeting in Omaha last year was a distinct gain upon any previous meeting, and I am sure all of us have come here with the idea that this meeting will be a better one." [Applause.]

The president then called for the report of the committee of arrangements.

Dr. J. W. Cokenower made the following verbal report:

"We have selected this hall (Knights of Pythias) as the place for holding the sessions of the association. We have provided a banquet for you, the particulars of which will be announced later on. We shall make such arrangements from time to time as we hope will be pleasant to you all. As secretary of the Iowa State

Medical Society, I have received notices within the last few days to the effect that a good many physicians from the state of Iowa expect to be here, and I believe we shall have a good and profitable meeting. This is all the report the committee of arrangements desires to make at this time."

The president asked Dr. Schooler, chairman of the executive board, whether he was ready to report, to which he replied that he was not, and that a report would be made later.

The next thing in order was the reading of the minutes of the previous meeting.

The secretary stated that the minutes had already been published in the transactions, and had undoubtedly been read by the members. He therefore thought it was unnecessary to read them.

On motion of Dr. Schooler, the reading of the minutes was dispensed with.

On motion of Dr. Cokenower, the secretary was authorized to furnish copies of the transactions to those whom he thought proper.

Under the head of "miscellaneous business," the secretary stated that there were by-laws to be acted upon, and that inasmuch as the matter was very important it would be wise to defer action until there was a larger attendance.

In accordance with the suggestion of the secretary, Dr. Schooler moved that the consideration of the by-laws be deferred until the afternoon session. Seconded and carried.

There being no further business to come before the association at this time, the president called for the reading of papers.

Dr. B. B. Davis, of Omaha, Neb., then read a paper entitled "Surgical Diseases of the Biliary Passages." The discussion was opened by Dr. Eastman, and continued by Drs. C. H. Mayo, Bernays, Harris, Hollowbush, Moore, and the discussion closed by the essayist.

At this juncture, on motion of Dr. Cokenower, several visiting physicians were made members by invitation and accorded the privilege of participating in the discussions.

At the suggestion of the secretary, the committee appointed to revise the constitution and by-laws was asked to make its report. The secretary, a member of the committee, stated that this committee was appointed for the reason that the constitution and by-laws under which the association had been working had been amended bit by bit, but had never been rewritten; hence, as the report did not involve any particular changes in the constitution, he did not think it was necessary to read it, the only change being the insertion of the word "surgical" for "obstetrical." When it came to the by-laws, however, more changes had been made. The secretary then read the by-laws as they had been amended, and on motion of Dr. Schooler, the report of the committee was adopted as read.

Dr. A. C. Bernays, of St. Louis, Mo., then read a paper entitled "The Prevention and Treatment of Ununited Fractures." The paper was discussed by Drs. Eastman, Davis, Wallace, Cokenower, Harris, Hornibrook, Moore, and the discussion closed by the author of the paper.

On motion, the association adjourned until 1:30 P. M.

FIRST DAY—AFTERNOON SESSION.

The association reassembled at 1:30 P. M., with the president in the chair.

Dr. Priestley, Jr., announced that the local profession, in connection with the Polk County Medical Society, had prepared a modest entertainment for the visiting physicians and members.

Dr. James E. Moore, of Minneapolis, Minn., read a paper on "Acute Suppurative Arthritis of Children," which was discussed by Drs. Schooler, Harris, and in closing by Dr. Moore.

Dr. Charles C. Allison, of Omaha, Neb., read a paper entitled "Acute Infective Osteomyelitis," which was discussed by Drs. Davis, Moore, Harris, and the discussion closed by the essayist.

Dr. J. E. Summers, Jr., of Omaha, Neb., read a

paper entitled "A Contribution to the Surgery of the Common Bile Duct," which was discussed by Drs. Campbell, C. H. Mayo, Knott, and in closing by the essayist.

Dr. O. Beverly Campbell, of St. Joseph, Mo., read a paper entitled "The Vaginal Route." Discussed by Drs. Eastman, Maxwell, Bernays, Wallace, and in closing by the author of the paper.

Dr. W. Jepson, of Sioux City, Ia., followed with a paper entitled "What Should Be Our Treatment of Fractures of the Anatomical Neck of the Humerus, Complicated by a Dislocation of the Head?" This paper was discussed by Drs. Moore, Maxwell, C. H. Mayo, and in closing by the essayist.

On motion, the association adjourned until 7:30 P. M.

FIRST DAY—EVENING SESSION.

The association reassembled at 8 P. M., and was called to order by the first vice-president, Dr. Campbell, who introduced President Crowell, who then delivered his annual address. He selected for his subject "Some Things." The address was discussed by Drs. Bernays, Schooler, and Hornibrook.

At the close of the discussion, on motion of Dr. Schooler, the first vice-president appointed a committee of three, consisting of Drs. Hornibrook, Schooler, and Summers, to consider the address of the president, and to report at the subsequent morning session.

On motion, the association adjourned until Thursday, 9:30 A. M.

SECOND DAY—MORNING SESSION.

The association met at 10 A. M., and was called to order by the president.

Dr. Rudis-Jicinsky, of Cedar Rapids, Iowa, read a paper entitled "Notes on the X-Ray: Its Usefulness and Mistakes," which was discussed by Drs. Harris, C. H. Mayo, Bernays, Skinner, and in closing by the essayist.

The president appointed to serve on the executive

board Drs. Wright, Davis, and Hornibrook, in the absence of Drs. Stoddard, Jonas, and Ferguson.

Dr. M. L. Harris, of Chicago, read a paper on "The Longitudinal Wire Suture," which was discussed by Drs. Moore, Bernays, Fairchild, and in closing by the essayist.

Dr. D. C. Brockman, of Ottumwa, Ia., read a paper entitled "Oophorectomy for Functional Nervous Diseases Occurring During Menstruation," which was discussed by Drs. Eastman, Campbell, Williams, Fairchild, Cokenower, Crowell, and the discussion closed by the author of the paper.

On motion, the papers of Drs. John Punton and Milo B. Ward, both of Kansas City, Mo., were read by title.

The secretary read the following report of the executive board:

REPORT OF EXECUTIVE BOARD.

The meeting of the executive board was called to order by Dr. Lewis Schooler. There were present: Drs. Lewis Schooler, O. B. Campbell, E. Hornibrook, A. L. Wright, and the secretary.

The secretary made his annual report, which was referred to Drs. Campbell and Wright.

Dr. Lord presented a bill for expenses incurred at the Omaha meeting, amounting to $39.90, which was allowed. A bill for $100 for printing the transactions for 1898 was also allowed.

Minneapolis was unanimously selected as the next place of meeting.

REPORT ON NOMINATIONS.

The following officers were recommended for the ensuing year:

President—O. Beverly Campbell, St. Joseph, Mo.

First Vice-President—A. C. Bernays, St. Louis, Mo.

Second Vice-President— J. R. Hollowbush, Rock Island, Ill.

Secretary-Treasurer—George H. Simmons, Chicago, Ill.

Executive Board—H. C. Crowell, Kansas City, Mo.,

chairman; Lewis Schooler, Des Moines, Ia.; John Prentiss Lord, Omaha, Neb.; J. E. Moore, Minneapolis, Minn.; M. L. Harris, Chicago, Ill.

Chairman Committee of Arrangements—A. W. Abbott, Minneapolis, Minn.

A proposition was received from the *Western Medical Review*, of Lincoln, Neb., in which it offered to publish all the papers, discussions, and transactions of the association, printing the same in book form similar to those of the last two preceding years, with the understanding that the *Review* shall be designated as the official organ of the association, and that $65 be allowed for 100 copies of the transactions. The proposition was accepted.

On motion of Dr. Brockman, the report of the executive board was adopted as read.

On motion, the association then adjourned until 1:30 P. M.

SECOND DAY—AFTERNOON SESSION.

The association reassembled at 2 P. M., with the president in the chair.

Dr. Van Buren Knott, of Sioux City, Ia., read a paper entitled "Cysto-Sarcoma Occurring Simultaneously in Both Ovaries," which was discussed by Drs. Lord, Bernays, Jepson, Moore, Eastman, and in closing by the essayist.

Dr. E. Hornibrook, of Cherokee, Ia., followed with a paper entitled "A Case of Cystic Teratoma Complicated with Hemorrhage," which was discussed by Drs. Bernays, Jepson, Hollowbush, and the discussion closed by the author of the paper.

Dr. J. P. Lord, of Omaha, Neb., contributed a paper on "Congenital Hip-Joint Displacement." Discussed by Dr. Moore, and the discussion closed by Dr. Lord.

Dr. A. L. Wright, of Carroll, Ia., read a paper entitled "Hematoma of the Vulva and Vagina."

Dr. G. G. Cottam, of Rock Rapids, Ia., read a paper on "Gastro-Enterostomy in Carcinomatous Obstruction of the Pylorus." This paper was discussed by Drs. Knott, Bernays, and the discussion closed by the essayist.

This being the last paper on the program, the president arose and congratulated the association on its very successful meeting, and he predicted a much better meeting for the ensuing year. He thought the profession in Minneapolis, particularly those who were members of the association, would do all in their power to secure new and valuable members. He thanked the members for the kind and courteous manner in which they had treated him as president.

The secretary moved that a vote of thanks be extended to the local profession and to the Polk County Medical Society for the excellent entertainment given to the members, and for the many courtesies extended to them. The motion was seconded and unanimously carried.

On motion, the association then adjourned, to meet in Minneapolis, Minn., December, 1900.

NEW MEMBERS.

The following were elected members of the association: C. A. Wheaton, St. Paul, Minn.; C. H. Mayo, Rochester, Minn.; A. B. Poore, Cedar Rapids, Ia.; A. C. Bernays, St. Louis, Mo.; S. E. Robinson, West Union, Ia.; Benjamin Thompson, Tama, Ia.; B. H. Criley, Dallas Center, Ia.; D. W. Smouse, Des Moines, Ia.; F. B. Dorsey, Keokuk, Ia.; C. O. Sones, Panora, Ia.; Charles S. James, Centerville, Ia.; J. P. Crawford, Davenport, Ia.; J. C. Anderson, Omaha, Neb.; G. R. Skinner, Cedar Rapids, Ia.; A. L. Hageboeck, Davenport, Ia.; Henry P. Newman, Chicago, Ill.; J. A. Quinn, St. Paul, Minn.; H. W. Orr, Lincoln, Neb.; Knute Hoegh, Minneapolis, Minn.; A. W. Abbott, Minneapolis, Minn.; M. L. Harris, Chicago, Ill.

GEORGE H. SIMMONS, Secretary.

PAPERS AND DISCUSSIONS.

SOME THINGS.

By H. C. CROWELL, M. D.,

KANSAS CITY, MO.

Mr. President and Fellows of the Western Surgical and Gynecological Association: I should be unmindful, indeed, if at this time I did not express to you my sincere thanks for the honor which I have enjoyed, of being your president for the year 1899. I say this not in a perfunctory sense, but with genuine heartfelt sincerity; for the time has arrived when to be president of this association is to be president of one of the most influential associations of this country; and permit me to digress just enough at this moment to say that the time has passed when we must look to the east only for all that is good, either in business or professional attainments. The west is to-day setting the pace in all things, and may the Western Surgical and Gynecological Association be at the front.

Conforming to established custom, I am expected, as your president, to deliver an address upon this occasion. I shall disappoint or gratify you by departing in some essentials from the usual style and character of addresses, and content myself by briefly referring to some things which might, in my opinion, profitably occupy the thoughts of the medical profession. I shall not attempt more than to bring the question before you, leaving the discussions largely for others who may be so disposed.

There are many things practical to us as a profession, people, and nation that might be considered with profit to us collectively, but since it cannot benefit any

single individual to agitate these questions, it is safe to say they will remain but imperfectly considered.

At the recent Hereford cattle show held in Kansas City, with its large number of fine cattle, excellent and perfected in every particular over the ordinary every-day common breed, I was forcibly impressed with the degree of excellence to which these cattle had been brought; but the attainment of this degree of perfection did not so occupy my mind as the means employed to bring about such ends, and I could not refrain from making comparison with the development of a people, the intelligence, the power, the agency of greatest import in carrying out the destiny of creation.

How neglected, how utterly disregarded, are all laws for higher and more perfect development, when applied to the human race! Is it less important that the most potent factor in making history, man, should receive less thought and care in his pedigree than the dumb beasts, his slaves? Such, we are compelled to admit, is the case. In the case of the animal we look carefully to his pedigree, and know, to an absolute certainty, what degree of purity his or her blood contains. Perfection is sought in every particular. The contour, temperament, durability, nature, and peculiar class attributes are sought out in both the male and female, in order that their union may produce the most typical specimen of their kind. The utmost care is given the progeny of well-selected antecedents, directed to the end of perfecting and developing to their fullest capabilities their inherent possibilities—no detail is neglected. In seeking to perpetuate their kind only the most perfect, according to a critical examination, are set apart for this purpose. If this higher degree of development and perfection is desirable in the dumb beasts, in creatures that figure in but a material way in the perpetuating of worlds, how much more should it seem that some regard should be paid to the rules governing the development and perpetuation of the human race? Why such utter disregard of all laws of development and improvement among men?

We should remember that the progeny always cor-

responds to its progenitors; that its tendency is to degenerate rather than to improve, generation after generation, unless care is exercised to introduce improved blood on one side or the other. If the blood of one parent is tainted with some infirmity, weakness, or peculiarity, it is quite apt to be visited upon the progeny. In the human family we observe none of the precautions taken by the cattle breeder. Here chaos reigns supreme. No laws, no rules, no custom or thought governs in the selection of mates in the human family. The only governing factors are passion, fancy, and fortune, either of which outweigh any physical or mental consideration. The phthisical are joined to the phthisical, the neurotic to the neurotic, the vicious to the vicious, and so on through the category of inheritable features, until we have become a nation of cripples, dyspeptics, and neurotics, inferior in stature and durability, if not intellectually. Such being the case, then, to a greater or less degree, should we not learn a lesson from the grower of the lower animals and insist that such rules and regulations be established as shall aid, at least, in stamping out inherited vices and diseases and bring about a higher order of beings,—beings with better mental and physical constitutions?

This is a political question which will, perforce, interest those who come after us, if it does not us; for the tendency is, by the promiscuous marrying and intermarrying, toward a degeneracy of the race, which in time must affect a nation. Indeed it may truthfully be said that to this cause, more than any other, may be attributed the fact that the descendants of Julius Cæsar have degenerated to the banana sellers, those of Demosthenes to the candy venders of our streets, and descendants of the mighty Moor relegated to the deserts of Africa.

Let us have laws which shall prevent flagrant violations of all physiological precepts, and a higher and better manhood. "Let the medical profession awaken to the fact that it owes a duty to the world more important than simply modifying the results of disease. Moral vices are plunging the nations of the earth into

crimes far worse in their effects, present and ultimate, than scores of the diseases for which we have remedies."

Turning from cattle to the horse, we see even greater evidences of improvement as the result of care in reproduction. Here we see special qualities brought to the highest degree of perfection, independent of instruction in an individual instance. It is noticeable, however, that with the higher blooded horse his intellectual nature is keeping pace with every other development. The stature, style, action, durability, and gait have all been made the object of care in pedigree until the most sanguine expectations of the horseman have been realized. In the dog, intelligence and all those attributes which constitute the desired qualities of its class are brought so nearly to a state of perfection that multitudes often express amazement at the possibilities in dog creation.

Looking now to the beauties of nature as seen in the flower kingdom, we are told of wondrous changes and added beauties brought about through the agency of man, by combining, in certain directions, individual differences, producing wondrous and striking changes in their attractive qualities as well as modifying their aromas to the most pleasing degree. And thus we see that man can bring about any change he may desire in domestic animals and plants by careful painstaking study of differences. Perfection has been the high ideal, and as a result a better product has been secured. Is there less reason for improvement in the higher order of creation than in the lower that causes absolute abandonment or neglect of laws which shall maintain the present standard or give us an improved class of beings? It is well understood that continued cultivation of a certain soil or of a certain class, without infusing something that shall maintain its power of reproduction, tends to a weaker and lower order of things. This principle and knowledge is taken advantage of by man in caring for the lower order of creation, but not his own species. This neglect along these lines of the betterment of self is not, as we have seen, in consequence of lack of intelligence and knowl-

edge of what can be accomplished by "natural selection," but must be the result of neglect, or an uncertain starting point—a sacrifice of high ideals for mercenary or passionate fancies.

I cannot better express my convictions along this line of thought, perhaps, than by quoting the lines of an original thinker, one whose thoughts, although not popular with some, will be handed down among the best, purest, and containing more of honest conviction than those of some possessed of more popular favor,—one who was born a hundred years too soon. I refer to lines from Robert G. Ingersoll:

"For thousands of years men and women have been trying to reform the world. They have created gods and devils, heavens and hells; they have written sacred books, performed miracles, built cathedrals and dungeons; they crowned and uncrowned kings and queens; they tormented and imprisoned, flayed alive and burned; they have preached and prayed; they have tried promises and threats; they have coaxed and persuaded; they have exhorted and taught, and in countless ways have endeavored to make people honest, temperate, industrious, and virtuous; they have built hospitals and asylums, universities and schools, and seem to have done their best to make mankind better and happier, and yet they have not succeeded.

"Why have the reformers failed? I will tell you why.

"Ignorance, poverty, and vice are populating the world. The gutter is a nursery. People unable even to support themselves fill the tenements, the huts, and hovels with children. They depend on the Lord, on luck, and charity. They are not intelligent enough to think about consequences or to feel responsibility. At the same time they do not want children, because a child is a curse, a curse to them and to itself. The babe is not welcome, because it is a burden. These unwelcome children fill the jails and prisons, the asylums and hospitals, and they crowd the scaffolds. A few are rescued by chance or charity, but the great majority are failures. They become vicious, fero-

cious. They live by fraud and violence, and bequeath their vices to their children. Against this inundation of vice the forces of reform are helpless, and charity itself becomes an unconscious promoter of crime.

"Failure seems to be the trade-mark of nature. Why? Nature has no design, no intelligence. Nature produces without intention, and destroys without thought. Man has a little intelligence, and he should use it. Intelligence is the only lever capable of raising mankind.

"The real question is, can we prevent the ignorant, the poor, the vicious from filling the world with their children? Must the world forever remain the victim of ignorant passion? Can the world be civilized to that degree that consequences will be taken into consideration by all? Why should men and women have children that they cannot take care of,—children that are burdens and curses? Why? Because they have more passion than intelligence, more passion than conscience, more passion than reason. You cannot reform these people with tracts and talk. You cannot reform these people with preach and creed. Passion is, and always has been, deaf. These weapons of reform are substantially useless. Criminals, tramps, beggars, and failures are increasing every day. The prisons, jails, poorhouses, and asylums are crowded. Religion is helpless. Law can punish, but it can neither reform criminals nor prevent crime. The tide of vice is rising. The war that is now being waged against the forces of evil is as hopeless as the battle of the fireflies against the darkness of night.

"There is but one hope. Ignorance, poverty, and vice must stop populating the world. This cannot be done by moral suasion. This cannot be done by talk or example. This cannot be done by religion or by law, by priest or hangman. This cannot be done by force, physical or moral. To accomplish this there is but one way. Science must make woman the owner, the mistress of herself. Science, the only possible savior of mankind, must put it in the power of woman to decide for herself whether she will or will not become a mother. This is the solution of the whole

question. This frees woman. The babes that are born then will be welcome. They will be clasped by glad hands to happy breasts. They will fill homes with light and joy. Men and women who believe that slaves are purer, truer than the free, who believe that fear is a safer guide than knowledge, that only those are really good who obey the commands of others, and that ignorance is the soil in which the perfect perfumed flower of virtue grows, will, with protesting hands, hide their shocked faces. Men and women who think that light is the enemy of virtue, that purity dwells in darkness, that it is dangerous for human beings to know themselves and the facts in nature that affect their well-beings, will be horrified at the thought of making intelligence the master of passion.

"But I look forward to the time when men and women, by reason of their knowledge of consequences, of the morality born of intelligence, will refuse to perpetuate disease and pain, will refuse to fill the world with failures. When that time comes, the prison walls will fall, the dungeons will be flooded with light, and the shadow of the scaffold will cease to curse the earth. Poverty and crime will be childless. The withered hands of want will not be stretched for alms. They will be dust. The whole world will be intelligent, virtuous, and free. It is far better to be free, to leave the forts and barricades of fear, to stand erect and face the future with a smile. It is far better to give yourself sometimes to negligence; to drift with wave and tide, with the forces of the world; to think and dream; to forget the chains and limitations of this breathing life; to forget purpose and object; to lounge in the picture gallery of the brain; to feel once more the clasps and kisses of the past; to bring life's morning back; to see again the forms and faces of the dead; to paint fair pictures for the coming years; to forget old gods, their promises and threats; to feel within your veins life's joyous streams and hear the martial music, the rhythmic beating of your fearless heart. And then to rouse yourself to do all useful things, to reach with thought and deed the ideal in your brain; to give your

fancies wing, that they, like chemist bees, may find art's nectar in the weeds of common things; to look with trained and steady eyes for facts; to find the subtle threads that join the distant with the now; to increase knowledge; to take burdens from the weak; to develop the brain; to defend the right; to make a palace for the soul."

In these lines we observe how keenly is appreciated a degenerative tendency under existing comprehension. Intelligence must supplant passion, fancy, and fortune. And how that shall be accomplished is the great and absorbing question. Education along physical lines must be the most potent factor in effecting desired changes. This education will devolve upon the medical profession largely or, at least, primarily, until the principles are more perfectly comprehended in the home. The national government can and should do much in bringing about the desired reforms, by sending into every home literature giving wholesome information. Material industries are fostered and abetted by government investigation and experiment. Ignorance is often more at fault than perverseness or negligence on matters pertaining to reproduction. Improper marriages between the weak, mentally or physically, or the vicious and criminal classes should be interdicted by law. With the marriage license should go the endorsement of competent medical authority, after being furnished with authentic family history. With care in these directions, happiness would in no way be lessened, but insured as nearly as possible, other things being favorable. It may seem to many that such an arrangement is purely idealistic; and so it may be, but capable of realization if sufficiently and properly agitated by the medical profession, who have a better opportunity of observing the needs of reform than any other class of citizens. By care along these lines, actuated by honest conviction, shrinking not from "public opinion," much can be accomplished for the welfare of people and nations.

It will be said that already some states have moved along these lines, and in that much be it to their

credit. The essential need is that such safeguards be widespread, numbering all the states and territories, making it impossible to step out of one domain into another to commit an act which in their own is considered unlawful. Strength, force, morality, and intelligence come only from good breeding. A nation's durability, its dignity and position of influence, depend upon its people and its institutions, all of which are the resultant force of proper regard in reproduction. "Nature is revelation, and the light of truth shines everywhere in the world. The want of faith and refusal to reason of men, interposing, make the shadows. Man is blindfolded by himself." This matter is not one of sentiment alone, but one of serious fact,—a question which must sooner or later awaken a lively consideration. It is so far-reaching in its effects, with the pernicious results disseminated, that the superficial thinker might readily fail to observe its tendencies and ultimate results. These are, like the wearing of the waters of Niagara upon the rock, slowly, but certainly, cutting into and destroying the original stability of society and government. So long as such subjects as Mulligan McNulty, a four-term convict of Kansas, who slashed the throat of Deputy Warden Thomas simply from a desire to cut some one, and without provocation, can, at some time when free, marry and probably be the father of a son, very likely to be born with perverse if not vicious passions, we cannot hope to lessen our prisons and almshouses, or add to the safety of individuals or institutions. This class of individuals, together with those of mental unsoundness, should be isolated and prevented from marrying, even though they might secure the flower of society. With a proper quarantine, vice and degeneracy could be stamped out, and in its place liberty, strength, and happiness spring up, which would characterize such a condition as that of the millennium.

The restrictions and limitations which this paper would imply do not refer so much to the higher order of society, although even this class is not free from violations of such observations in mating as shall

secure healthy, sound offspring. The lower classes contain most of depravity, and disregard, in the most flagrant manner, all conscientious scruples, even carrying known communicable infirmities to the innocent. This class the world over has been the most prolific in populating the world, and sowing seeds that have occasioned the great demand for prisons, almshouses, and asylums. This class has well-nigh taken the management of corporations out of the hands of the owners, and practically disfranchised the sober, thoughtful citizen.

The prosperity of a country has never been found to depend upon its numbers, but upon its intelligence, and its physical, mental, and moral soundness. The principle of expansion which now prevails is undoubtedly good, viewed from a commercial standpoint, but when we look beyond, we might reasonably speculate in regard to the resulting population generations hence. True, we might say, that is a question so remote that we need spend no time in its consideration. But are we correct in discharging this question so peremptorily?

Let us look back but a few years and observe what the feeling has been in regard to unrestricted emigration. A halt has been called, not from lack of domain, but from a lively realization of a too rapid increase of an undesirable element. And such we have every reason to expect might be the result of an extensive aggregation of an inferior people marrying and intermarrying, without restriction or regulation. This has been the history of other countries, from which we should profit. Finally, not to be interminable, we are impelled to say that degeneracy is the result of fostering or permitting the perpetuation of weakness, moral, mental, or physical, each generation growing weaker. Shall we not awaken to the fact and check it?

SURGICAL DISEASES OF THE BILIARY PASSAGES.

By BYRON B. DAVIS, M. D.,

OMAHA, NEB.,

PROFESSOR OF SURGICAL PATHOLOGY AND CLINICAL SURGERY, OMAHA MEDICAL COLLEGE; CHIEF SURGEON TO IMMANUEL HOSPITAL, ETC.

Since time will not permit an exhaustive discussion of all the lesions which affect the bile tract, my remarks will be limited to a consideration of (1) infections of the gall-bladder and ducts, (2) adhesions to surrounding viscera, and (3) gall-stones.

Considered from an anatomical standpoint, it seems strange that infection through the common duct from the main street sewer, the duodenum, is not more common. Infection menaces the biliary passages from three sources: (1) From the portal system, the bacteria descending from the liver with the bile; (2) from the arterial blood supplying the gall-bladder and ducts; (3) from bacteria migrating from the duodenum into the common duct. That cholangioitis is not more frequent is not due so much to absence of enemies as that the defense is so perfect; in other words, the physiological resistance of a sound mucous membrane and a healthy muscular coat is able to nullify the attacks of the ordinary invader.

Granting the truth of this statement, in order for an infection to occur the physiological resistance must be weakened, or the numbers or virulence of the invading bacteria must be increased. A lowered general physical tone due to illness, overwork, or exposure will lessen the powers of resistance; a simple catarrhal process advancing from the duodenum up the common duct by contiguity will also form an infection atrium, and furnish a suitable soil for the nourishment of germs introduced by any of the three routes mentioned. Or there may be not only a lessened resistance due to a depressing illness, but other bacteria than those usually finding their habitat in the economy may be present. Such are the diplococci pneu-

moniæ, the bacillus typhosus, or any of the usual pus cocci which may be present in unusual numbers, because of a suppurative process going on in other regions of the body. Whenever, then, we get a sufficient lowering of the physiological resistance with virulent bacteria present, an infection is the result. The infection may be very slight, only enough to result in an increased flow of mucus with a scanty number of leucocytes, or it may be so severe as to result in a rapidly fatal empyema, and with gradations between these two extremes. An infection, depending upon its virulence and other circumstances, may rapidly subside with an early restitutio ad integram. It may infect through the softened wall, and cause adhesions to the surrounding viscera. Infection may be carried through, and a suppurative pericholangioitis may result. The gall-bladder and ducts may become distended with pus; an ascending infection may give rise to single or mutiple abscesses of the liver; even gangrene of the gall-bladder may result from infection.

The symptoms of an infection may vary according to the virulence and extent. When of a mild character, there is only a slight rise of temperature, some local tenderness perhaps, with general malaise, loss of appetite, and jaundice, if there is any considerable obstruction of the common duct continued over a few hours or days. Added to this will be found usually some increase in the liver dulness, and occasionally a pear-shaped tumor may be felt just below the extremity of the ninth rib. In a mild case, such as described, the treatment is purely medicinal and dietetic, and surgical measures are not demanded. The convalescence is usually complete, or, at least, apparently complete. In a severer case, where pus is abundant, the temperature and pulse run high, vomiting and total loss of appetite are present, chills are common, the gall-bladder is easily palpable and very tender to the touch, with jaundice usually. At as early a moment as possible to determine the probable presence of pus, surgical intervention becomes imperative. The operation consists in emptying the gall-bladder and

ducts of all pus, as far as possible, and establishing free drainage through the gall-bladder by suture of the fundus, when practicable, to the peritoneum at the upper end of the abdominal wound. To promote rapid healing, the gall-bladder and ducts should be frequently irrigated with hot normal salt solution. In the very virulent cases the operation must be undertaken very early—within the first twenty-four or forty-eight hours—if the patient would be given the best chance. In all cases, the longer the operation is delayed after pus forms the greater will be the damage done to the bile passages themselves, or to the liver, and the more serious will be the adhesions to surrounding viscera.

The presence of adhesions is an indication of a previous pericholangioitis, either due to an infection of the biliary tract or to an inflammation of an adjacent organ. These adhesions may give rise to no symptoms, or, on the other hand, may produce temporary or permanent, partial or complete obstruction of one or more ducts. If of the cystic duct, mucous or muco-serous dilatation of the gall-bladder will result, with more or less colic, soreness, and tenderness on pressure over gall-bladder, also gastric crises. If the obstruction is in the common duct, the gall-bladder may be distended or atrophied; the duct back of the point of obstruction is likely to be dilated, pain may or may not be present, but tenderness is usually present; gastric symptoms and profound jaundice, if obstruction is absolute, or nearly so. Sometimes the adhesions only produce a dragging between the gall-bladder or ducts and surrounding viscera, only becoming painful when peristalsis is active, or when the patient is exercising or changing his position.

A positive diagnosis between adhesions and gall-stones is often impossible before operation. In all cases, where the symptoms are severe enough to give rise to chronic disability, or too much and oft-repeated pains, surgical intervention is called for. The breaking up of adhesions is, in such a case, necessary. They are expected to form again, but there is hope they will

not form in such a manner as to cause return of symptoms.

The most frequent cause of chronic invalidism or recurring acute attacks of severe pain is the presence of gall-stones. In respect to their origin, there are two theories. The chemical theory has for its foremost supporters Thudichum and Bouchard, who assert that calculi are formed by the precipitation of the cholesterin from special chemical changes in the bile. This theory has been vigorously contested by Naunyn, who claims that in cholelithiasis the proportion of cholesterin is not increased and that the chemical ingredients of the bile do not cause the formation of calculi, but that their formation depends largely upon the existence of some body in the gall-bladder suitable for a nucleus around which the cholesterin, bilirubin, etc., may be deposited. It is self-evident that every gall-stone must have something to serve as a nucleus. To suppose that this nucleus is simply a mass of cholesterin is not in accord with what has been found out of the structure of the stones when subjected to a minute examination.

In Twentieth Century Practice, vol. IX, page 713, Semmola and Gioffrede state that gall-stones may be homogeneous or mixed. The homogeneous form are made up chiefly of cholesterin, and they do not mention the existence or non-existence of a nucleus. The mixed form on cut section shows:

"(1.) A cortical layer of a deeper color and a harder consistence, concentrically stratified, formed of bilirubin or of lime and bilirubin.

"(2.) A central nucleus composed of mucus infiltrated by pigment, or of some foreign body.

"(3.) A median radiated zone, composed of cholesterin of a light color, and more or less transparent."

Recent investigators are coming to the opinion that bile may flow through the normal passages indefinitely without any calculi forming. The bile might be charged with an excess of salts, and yet leave no deposit behind. But if a mild or severe infection is present with resultant formation of balls of mucus,

muco-pus, clumps of bacteria, or anything suitable to form a nucleus about which the biliary salts may be deposited, calculi are likely to result. If, in addition to these conditions, lack of tone of the wall of the gall-bladder is present, as from tight lacing, sedentary pursuits, etc., the probabilities of gall-stones resulting are increased. For this reason a mild cholangioitis should be looked upon anxiously and treated with the greatest care.

Within the past few years ten cases of cholelithiasis have been studied in which the bacillus typhosus was found to be the exciting cause. Two years ago it was the writer's privilege to see, in consultation, two cases of cholangioitis with marked jaundice following in the convalescent stage of typhoid fever. Whether these cases have developed calculi, I do not know, as they have been lost sight of; but it is reasonable to suppose the bacillus typhosus was the infecting agent. Cushing proposes the following hypothesis regarding the formation of gall-stones in cases of typhoidal cholelithiasis: "(1.) The bacilli during the course of typhoidal infection quite constantly invade the gall-bladder. (2.) The organisms retain their vitality in this habitat for a long period. (3.) In the course of time the bacilli are almost invariably found clumped in the bile, suggesting the occurrence of an intra-vesical agglutinative reaction. (4.) The clumps presumably represent nuclei for the deposit of biliary salts, as micro-organisms may with regularity be demonstrated in the center of recently formed stones; gall-stones being present in association with the latent long-lived infective agents, an inflammatory reaction in the viscus of varying intensity may be provoked at any subsequent period."

After an infection of the biliary passages and the formation of gall-stones by the deposit of bile salts around nuclei of balls of pus, or mucus, or clumps of bacteria, the infection may combine, but usually gradually subsides from death or attenuation of the bacteria. But at any time subsequently, if the stones produce irritation or traumatism of the mucous mem-

brane, a lowered physiological resistance is produced, and a reinfection is invited through the open door leading from the duodenum or by bacteria which may by chance reach the bile tracts by means of the portal vein or the capillaries.

Examination of large numbers of dead bodies in the necropsy room has established that about 10 per cent. of the people we meet on our streets have calculi in their gall-bladders. The great majority of them are not only ignorant of the fact that they are thus affected, but suffer no inconvenience from the presence of their unbidden guests. It is only when the stones get into the ducts and cause obstruction and traumatism, or produce enough irritation of the mucous membrane to admit infection, that they produce unpleasant symptoms. As a rule, after one attack of biliary colic, sufficient pathological results are produced to make other attacks probable.

Among the cases operated upon by the writer, two were found who had never had typical attacks of gall-stone colic. In these cases tenderness over the region of the gall-bladder was always marked. Occasionally, after riding or heavy labor, there would be some pain of a heavy aching character which, combined as it was, with a good deal of gastric disturbance, was of sufficient moment to cause them to seek relief by operation. In each case the gall-bladder was well filled with calculi of fair size, and the relief of the disagreeable symptoms was complete.

Others have very severe paroxysmal attacks of pain over epigastric and right hypochondriac regions, and radiating backward to the lower angle and inner border of the right scapula. If the stone is caught in the cystic duct, jaundice is very rare; on the contrary, when the stone causes obstruction of the common duct, or the hepatic, jaundice is the rule. Obstruction of the cystic duct produces great distention of the gall-bladder, with a mucoid fluid, which is clear if the obstruction is complete and of considerable duration; but of the color of the bile if the obstruction is only partial. Obstruction of the common duct,

when long continued, usually produces atrophy of the gall-bladder. Probably the symptom most universally present in cases in which the calculi produce any symptoms at all is the occurrence of gastric crises usually following imprudence at the table. This symptom is usually attributed to reflex irritation, but has never been explained to my entire satisfaction. The presence of gastralgia, even without any other of the classical symptoms of gall-stones, is enough to excite suspicion and should direct attention to the gall-bladder.

Examination of a patient with suspected gall-stones should be carefully done. As complete relaxation of the muscles, especially the right rectus muscle, should be obtained as possible. The patient's confidence should be secured by gentle palpation, and the nervousness allayed by assurances that nothing will be done to produce unnecessary pain. With the patient resting on the back and thighs flexed on the abdomen, the fingers of the right hand can be pressed backward toward the spinal column, at a point about midway between the extremity of the ninth rib and the umbilicus, sliding the hand slowly upward will often either detect a pear-shaped tumor or elicit tenderness. This failing, palpation may be made, while the patient takes a deep inspiration, thus crowding the liver and gall-bladder downward to a place more accessible to the examining fingers. If neither of these manœuvres prove successful in establishing a diagnosis, I have succeeded in catching the gall-bladder on my fingers, by having the patient stand on the left foot, with the right foot resting on a stool or low chair, and leaning the body slightly forward. Now, using the fingers of the right hand as before, a sort of ballottement of the distended gall-bladder can sometimes be practiced. In one case the demonstration was perfect, after having failed to touch the gall-bladder by any of the other usual methods. In practicing palpation we only feel the gall-bladder that is distended with fluid. The stones, when considerable fluid is lacking, can practically never, so far as my

experience goes, be palpated through the abdominal wall.

Granting that gall-stones are present, what are the symptoms which call for surgical intervention? (1.) Jaundice, long continued, with or without pain, produces so much depression that the patient's welfare is best protected by an operation. (2.) Severe attacks of biliary colic with or without jaundice, occurring at regular intervals, call for operation. (3.) Mild attacks of colic occurring frequently, or constant tenderness in the region of the gall-bladder keeping the patient continuously on his guard, should be operated on if the patient's business compels an active life. (4.) Whenever infection is present leading to suppuration, a prompt operation is a life-saving procedure.

Reports of my cases are not in order here, except brief mention of one or two of special interest. One of them, because of the fatal issue and several interesting features, will be briefly related:

Mrs. ———, of Holdrege, Neb., gave a history of frequent attacks of hepatic colic beginning at the age of 14 years. The pain was severe, located in the epigastrium, right hypochondrium, and radiating to the lower angle of the right scapula. These attacks occurred at intervals until May, 1895, when the paroxysms of pain became more severe, with chills, fever, and jaundice, and were almost continuous until July 9, 1895, when Dr. J. T. Miller, of Holdrege, operated. He removed from the gall-bladder 300 stones. He could find no stones in the common duct, but to make sure of a free exit for the bile, he united the gall-bladder to the duodenum by means of a Murphy button. A few days later, bile and other small calculi began to escape through the external wound. The stools were closely watched, but the button has never been found. By September, 1895, the external wound had closed. Soon after the operation the jaundice disappeared, and the pain ceased. The following winter, seven or eight months after the operation, the paroxysms of pain returned as before, with jaundice. The symptoms have continued, and for two years she

had not been free of jaundice, and seldom had pain been absent. Had lost much weight, and was emaciated and weak to the last degree. No tumor could be made out. The diagnosis of obstruction to the common duct was made, and operation advised.

February 2, 1898, 1 P. M., operation. Dr. Swanson gave ether, and Drs. Detwiler and Miller, of Holdrege, assisted. Dense adhesions were found everywhere. A great deal of careful dissection was necessary before anything could be recognized. It was finally possible to push the colon downward, the duodenum to the left. Closely adherent to the duodenum was found the small atrophied gall-bladder containing a dozen stones, about which the viscus was firmly contracted. The cholecyst-duodenal opening was completely closed, and nothing but dense fibrous adhesions marked the site of the former anastomosis. Nothing but a fibrous cord remained as a remnant of the common duct. An incision was therefore made into the gall-bladder, the stones removed, and a small sized Murphy button again used to unite the atrophied gall-bladder to the duodenum. There was so much tension that considerable apprehension was felt in regard to the union holding. Gauze drainage was made use of with a rubber tube in the middle. At close of the operation, which lasted two hours and thirty minutes, there was some shock, but not so severe as to be alarming. There had been no excessive hemorrhage, but the oozing had been very free and continuous.

10 P. M. Dr. Swanson telephoned that pulse was very weak, and patient rapidly sinking. Stimulants and enemata had been freely used, but without effect.

11 P. M. Arrived at the hospital and found the patient practically pulseless, only the faintest flutter at the wrist, but the heart still beating. There had been considerable oozing of blood into the dressings. Two quarts of hot normal salt solution were introduced into the median cephalic vein. In half an hour, so striking was the effect that the pulse was 96 per minute and of fair volume. The use of the infusion was followed by a chill.

February 3, 4 A. M. Temperature 100.6°, pulse 100, and resting well.

4 P. M. Much eructation of gas, and frequent vomiting of a greenish fluid.

February 4, 1 A. M. Pulse 128, temperature 103⅘°. About this time began passing gas per rectum, and vomiting ceased.

10 A. M. After an enema bowels were freely evacuated, the feces being stained with bile, the first time for months.

February 7. Until this morning, symptoms slightly improved, but on changing the dressings thin chyme mixed with bile was found to be welling from the wound.

February 9. Examination with a probe proved the button to be in situ, and an index finger and a forceps were used in an endeavor to remove it, but it slipped into the duodenum. About half of the union between gall-bladder and duodenum was found to be separated, and the patient's condition was deplorable; for in addition to the constant discharge of bile, every time food or water was ingested, it quickly found its way into the dressings, and slow starvation was the result. There was no time that the condition was such as to warrant any radical procedure to stop or lessen the flow through the fistula. She gradually sank and died February 27, 1898, twenty-five days after the operation. A partial autopsy was allowed. The condition of the anastomosis was found to be partial union of the posterior wall with a ragged hole communicating with both gall-bladder and duodenum on the anterior wall. The button was found in the ascending colon, and would probably have passed had life been prolonged. Dr. Miller's button was not found. It probably passed unnoted.

An added argument in favor of operation for the removal of gall-stones, which it seems to me ought to have some weight, is that the constant irritation of gall-stones is an important factor in the production of cancer.

Still another danger which menaces a person with gall-stones is perforation of the gall-bladder or ducts

into the free peritoneal cavity. One such case, which resulted fatally, impressed me so forcibly that it has caused me to recommend operation a little more warmly than before.

Mrs. C. E. D., residing in Omaha, was attended in the autumn of 1897, by Dr. R. C. Moore, for a severe attack of biliary colic, with vomiting, a rapid feeble pulse, temperature running 100 to 103°, almost complete obstruction of the bowels, great gaseous distention, and the pain could only be relieved temporarily by large doses of morphine. There had been some previous attacks of pain and vomiting, but they had always been attributed to gastralgia. This was the condition I found when called to see her at her residence, December 2, 1897, in consultation with Dr. Moore. Tenderness was elicited over the gall-bladder, but no tumor could be felt. The pain was also found to radiate to the lower angle of the scapula. No jaundice. The diagnosis of gall-stones with infection of the bile tracts was felt to be warranted, the paroxysms of pain being caused by impaction of a stone in the cystic duct. Operation was advised, but by the following morning some relief of her symptoms was manifested, and she would no longer consider an operation. From this time until May, 1898, she was in fair health, occasionally having some pain, but it was endurable. May 16, 1898, when feeling as well as usual, she had a sudden intense pain in region of gall-bladder, and went into collapse. There was no time to call Dr. Moore as he lived some distance away, so a near-by homeopathic physician was hastily sent for. He gave stimulants, and continued to attend her for the next two days, when, as she was not improving, he was discharged, and Dr. Moore called. At his first visit her pulse was very weak and thready, there was great abdominal distention, vomiting, not very severe pain, an anxious countenance, and everything foreboded ill. Temperature not very high. He called me to see her May 18 at 10 P. M., and I found her moribund, pulse could not be counted, and the abdomen distended, not only with gas, but fluid. No operation was to be thought of. I gave it as my opinion, and Dr. Moore

concurred, that there had been a perforation of the gall-bladder. Death occurred early in the morning, May 19, and we secured permission for a limited autopsy. The abdominal cavity was found filled with bile, the peritoneum deeply stained, but no peritonitis seemed to be present. A small atrophied gall-bladder was found firmly contracted around nine gall-stones. The largest stone was lodged in the cystic duct, and a sharp corner had perforated the wall, the orifice being large enough to admit a lead pencil, the stone remaining in the viscus.

It seems to be a well established fact, that after operation for removal of gall-stones, the cure is likely to be permanent. If the calculi are of infectious origin, as seems to be proven, it explains the infrequency of relapse. In order for new gall-stones to form, a new infection is necessary. A new infection, after all subsidence of the old and the removal of all sources of irritation, is no more likely to occur in a gall-bladder once the habitat of gall-stones than in one never thus affected; hence the danger of reinfection and formation of new gall-stones is remote.

A description of the technique practiced in my operations is not in place at this time, except in brief. The so-called "ideal" cholecystotomy—immediate suture of the wound in the gall-bladder and dropping it back into the cavity and primary closure of the abdominal wound—is further from the ideal in its results than any of the operations thus far devised. In every case of gall-stones sufficiently severe to call for operation, immediate closure without drainage is a violation of fundamental surgical principles. Not only are small stones and sand likely to be overlooked, but, as long as any infection remains, mucus, pus, and clumps of bacteria stand ready to serve as nuclei for new stones. The truly ideal method, then, from the standpoint of results, is free drainage, with frequent irrigation until all inflammation and irritation have subsided.

DISCUSSION.

DR. JOSEPH EASTMAN, of Indianapolis, Ind.: I have been very much interested in the paper of Dr. Davis, and for several important reasons. The paper is a little different from

any I have heard for some time on the subject of gall-stones, for the reason that it deals with certain complications which the operator or surgeon is continually encountering, and which are scarcely mentioned in text-books, in articles written for medical journals, or in papers read before medical societies. The paper is wide in its scope, referring to certain dietetics which have their influence upon the functions of the liver, and along that line might be referred to in connection with the prevention of the formation of gall-stones. The statement that 10 per cent. of all post-mortem examinations will show gall-stones is significant, and argues much more in favor of operative procedure in these cases than some would have us believe.

In operating for gall-stones, for infiammation of the bladder, or for pericystic inflammations, such as the essayist referred to, there are certain considerations which need not be thought of in connection with appendicitis or of operations lower in the abdomen. Hernia, on account of the absence of the superincumbent pressure of the abdominal viscera, is scarcely to be considered. The incision is usually small and, when closed, leaves the patient with an abdominal wall quite as strong as it was before. Considering the large percentage of cases of gall-stones with which we as surgeons have to deal, an exploratory incision is to be advised. Personally, I would recommend operation for disease of the gall-bladder even on the slightest suspicion because of the serious results which may follow without operative intervention. At a meeting of our state medical society so much was said about the difficulties of gall-bladder surgery, that I spoke of Meckel's diverticulum, and thought it would be well to call the vermiform appendix and the gall-bladder the Devil's diverticulum. So many things will happen between these organs that the surgeon needs to be on the alert for these difficulties.

I have had two cases which are of great interest in connection with inflammations of the gall-bladder. I was called to operate on one case for appendicitis, and found a distinct tumefaction in the right iliac fossa, where we find the condition of appendicitis or of inflammation. It was my belief that to operate in the presence of such an acute inflammation as was present at that time would be fatal. I treated the patient for some days, and during that time we found the tumor gradually receding. At the end of a month the tumor was well up where the gall-bladder should be. I operated, removed a quart of pus from the gall-bladder, drained it thoroughly, and the patient made a good recovery.

In another case I supposed I had to deal with a pyonephrosis, and, on cutting in the back, as I would do in a case of pyonephrosis, I found gall-stones, pus and bloody serum pouring out. So these inflammatory conditions which surround the gall-bladder, and which are a source of annoyance continually to the operator, must be considered, as well as the delicate and well-defined technique which some operators would have us to consider.

The doctor spoke of the gall-bladder being atrophied when it was attached to the duodenum with the Murphy button. A series of post-mortem examinations (I do not recall the

name of the German who made them) showed that in cholecystotomy the gall-bladder shrinks and is really atrophied. It no longer serves the function of a gall-bladder, perishes away, and becomes a mere fiber after years.

If the gall-bladder is obliterated in any event, my favorite operation, after having tried many methods in over forty operations, is cholecystotomy, bringing up the gall-bladder, attaching it to the abdominal wound, and thoroughly rinsing it out and establishing the best of drainage. Where I have found a large amount of ascitic fluid in the abdomen, I have brought up the gall-bladder, attached it to the abdominal wound. The kidneys, heart, and other organs having shown that they were healthy and that the pathological condition was due to an enormously enlarged liver, by draining the liver through the gall-bladder I could report two cases cured. Where we have a large amount of pus in the gall-bladder, or where we have inflammation or an infected gall-bladder, the best thing is to drain it. I recall two cases in which I had my finger in the gall-bladder, hunting as carefully as possible for additional gall-stones, after having removed several; not only that, but passing my fingers well under the liver and palpating the ducts carefully, failing to find additional gall-stones, have had them washed out through my drainage tube, situated in the gall-bladder, several days after. Therefore, leaving the gall-bladder open gives the additional advantage of not only relieving or allaying the inflammation in the parts, but giving the possible hope that the additional gall-stones that are left may be washed out. When we have enormous distention of the liver by pus or inflammation, or distention from gall, it seems to me it is difficult to make a cholecystenterostomy, using the Murphy button in attaching the gall-bladder to the duodenum, or to any portion of the intestine without subsequent contraction of the gall-bladder by some of the inflamed and distended tissue, which is unnecessary and may be avoided by doing a cholecystotomy instead of a cholecystenterostomy.

According to J. Milner Fothergill, there are many men and women who are subject to indigestion and biliousness, who have weak livers and are certain to have an attack of absorption of gall, of biliary colic, or neuralgia of the stomach whenever they partake of a meal containing large quantities of soup or beef, or rich nitrogenous food. Fothergill in his book speaks of a third digestive process—the elaboration of the nitrogenous compounds in the liver. He says it is cruel for some patients to subsist on acid fruits and cereals when they much enjoy eggs, beef, and broth and nitrogenous substances, but he says they may live out their days in that way, whereas they would sooner or later die from some complication of the liver if they continued to indulge their appetites. I have found his book worth reading in connection with cases I have had, not only those in whom I was thinking of the possibility of the existence of gall-stones, but where I was dieting my patients after I had removed gall-stones. I recall a case that I saw the last summer. The attending physician wrote me to the effect that the patient was as yellow as before; that she had had another attack of

jaundice, and was looking very bad, and thought I had better visit her. I did so, and found that her appetite had gone back on everything except beef tea. She was living absolutely on it. We stopped that and put her on an acid fruit diet, cereals, and hominy, etc., and the jaundice passed away in a few weeks. She began to take on flesh and has remained perfectly well since.

The essayist, in speaking of dietetics, touches the very important point of the diet of a patient who may have gall-stones, as well as the dieting of patients upon whom we have operated for gall-stones. My experience has been very peculiar, and I do not understand it myself. I have never found a gall-stone in the common duct in forty operations. I have found them in the cystic duct. I have found a stone or stones in the cystic duct, making an acute flexion in the common duct when it was obstructed, but have never yet found a stone in the common duct. I cannot conceive of a patient living very long with the common duct absolutely obstructed, so that the secretory and excretory functions of the liver are interfered with. Nor can I believe that pains are caused by the impinging of the gall-stone or gall-stones in the opening of the cystic duct. I can refer to two cases where every symptom of gall-stones was present, the pain coming on paroxysmally, the patient having decided jaundice, and it required hypodermic injections of morphia to relieve the pain. We cut down upon the gall-bladder, drew it up, and found that it had practically perished away. There was nothing in it. The little gall-bladder that was found was not larger than my little finger, bound down by adhesions, which were separated, and nothing was found in the gall-bladder. The patient never had another attack afterwards, notwithstanding that she had previously all the symptoms of gall-stones. The attending physician told me that her pains were due to the passage of gall-stones.

I recall the case of another patient in which I removed 760 small biliary calculi, and in which the buttermilk, taken by the mouth, poured out through my drainage tube, passing down through the duodenum and out through the drainage tube. The castor oil which had been given came out the same way; yet this patient had frequent recurrent attacks for six months as if gall-stones were passing. I speak of these cases because we are led to believe that the pains which these patients get are due to the passage of gall-stones, or to the presence of biliary calculi impinging on the orifice of the cystic duct, but I am inclined to think that the pains are due more to certain habits, to the nervous supply of the liver, which may lead us astray in making a diagnosis. However, in a case of doubt, an exploratory abdominal section is the thing to remove the doubt and give the patient the benefit of whether there are gall-stones present or not.

DR. C. H. MAYO, of Rochester, Minn.: Dr. Davis in his interesting paper speaks of empyema of the gall-bladder, and that in these cases when drainage and irrigation are employed the patients invariably get well. That is not always true. While the majority of them do get well, others drag along for five or six weeks after operation and there is no

flow of bile, and consequently they develop a mucous fistula. How do they get well? These patients get well either from suppuration taking place and destroying the mucous membrane, so that we have complete atrophy of the mucous surface of the gall-bladder, or they get well by drainage and irrigation, producing an inflammation about the cystic duct and leaving its lumen open. What is to be done in those cases in which there is the formation of a mucous fistula, or which temporarily heal up and recur either with pain or the reformation of a tumor, and again consult the surgeon for relief? In this connection I wish to speak of an operation which I believe was first performed by Dr. W. J. Mayo for the relief of this condition. Anyone who has done much surgery upon the gall-bladder will have noticed that in suturing the gall-bladder to the parietal peritoneum it is sometimes easy to separate the mucous from the fibrous coat. In passing the needle through it pushes apart of itself. In the Annals of Surgery, October, 1899, page 458, Dr. W. J. Mayo writes of this operation as follows: "Considering that the mucous membrane is the only part of the gall-bladder which gives rise to after-trouble, we have during the past year, in three cases, opened the gall-bladder and removed the mucous membrane to the cystic duct, at this point the mucosa is cut across part at a time and one or two bleeding points caught with forceps and tied, the duct being left open. The muscular and peritoneal coats are sutured into the incision and drainage established in the usual manner. It is surprising how easily this can be accomplished. The mucous membrane is tough and separates from the muscular coats readily. The adhesions to the peritoneal coat are only separated enough to explore the ducts. It does not require a long incision, nor does it necessitate prolonged manipulation, and yet the essential part has been removed to the same extent as in the usual cholecystectomy."

Dr. A. C. Bernays, of St. Louis, Mo.: The paper read by Dr. Davis promulgates the modern views with reference to the etiology of gall-stones in a manner which I think is exceedingly clever and correct. I do not desire to add anything to what he has said about the etiology of gallstones, but in concluding his paper he made some remarks about the ideal cholecystotomy. Now, I am compelled to plead guilty of having been the inventor of that operation and of having designated it as ideal cholecystotomy. At that time, about the beginning of the '80's, ideal operations were somewhat on the tapis, and Lawson Tait was the great promoter of natural operation in contradistinction to ideal operation. To-day I am going to revoke that operation, as well as the recommendation I gave at that time. Lawson Tait has said that the best surgeon is he who most closely imitates nature's methods of healing things. Now, nature's method of curing gall-stones is to cause adhesion between the cupola of the gall-bladder and the abdominal parietes or transverse colon, and then, when pressure within the gall-bladder becomes very tense, perforation will finally take place, and the gall-stones will be discharged to the outside through the abdominal parietes, after an abscess has formed, or into the transverse colon. In imitating that method, Lawson Tait

performed the best operation. As Dr. Eastman has said, the operation which he likes to do, and which we will continue to do until the end of time, is the ordinary natural cholecystotomy. Lawson Tait was undoubtedly correct in saying that the man is the best surgeon who in all instances closely imitates the methods of nature in her healing processes. I want to explain to you how I came to do the ideal cholecystotomy and how I came to recommend it. I operated on a young woman who, by the way, I saw last week. It is sixteen years since the operation was done. This young woman had a very painful, pear-shaped tumor in the region of the gall-bladder. Upon cutting down upon the tumor I found a perfectly smooth, non-adherent tumor which upon its surface looked the same color and gave the same external appearance as does a pregnant uterus. It looked like a normal, pinkish, muscular, thick bag, covered by perfectly normal, glistening peritoneum. I opened the sac and out of the sac poured, as you have all seen many times, a perfectly clear mucus down to the last drop. There was not a particle of pus in the viscus. This clear fluid was all discharged, and then I found firmly lodged in the neck of the cystic duct a very large calculus. It was difficult to dislodge this calculus, but I finally succeeded in doing so. I had before me a perfectly clean bag, the mucous membrane of which, if anything, was healthier than I had ever seen one before; it was more succulent, well adapted to the placing of sutures, and I could not resist the temptation, never having seen such a thing before, to sew up that gall-bladder. I sewed up the small cupola after the Czerny-Lembert method, first inserting a row of Czerny stitches, then over that a row of Lembert stitches, dropped the gall-bladder back into the abdomen, and the patient recovered. Bile had poured out into the bladder within a few minutes. There was no obstruction present. I called it the ideal operation in contradistinction to a natural operation because I immediately achieved a perfect cure, which nature only achieves after the formation of a biliary fistula. Now, gentlemen, if our methods of examination and diagnosis were so far advanced that we could always with certainty say that the bile ducts are patulous, I would still believe that ideal cholecystotomy, the operation of closing the gall-bladder and dropping it back into the abdomen, would be a justifiable procedure. But the premises have not been fulfilled. We cannot always with certainty say that the ducts are patulous; therefore, I find that nearly all surgeons, just as Dr. Davis, have abandoned the operation. Before the operation was finally abandoned, however, one of the greatest surgeons (Czerny) proposed a modification of the ideal method, and which makes it a safer operation. Instead of dropping the gall-bladder back into the abdominal cavity, he does not sew it up, as I recommended, but anchors the gall-bladder with a few stitches to the cut edges of the external incision, claiming that if the gall-bladder should become distended with bile, fluid, or mucus, and perforation should take place, it would do so through the external incision, which would become reopened, and not into the peritoneal cavity. That operation, according to recent

medical literature, is practiced a good deal in Germany. It is the modified ideal cholecystotomy.

Lastly, I am free to confess that my strong recommendation of the ideal operation was one of the sins of my inexperience and youth, and I have no fight with Dr. Davis for saying that it is not a very good operation.

Dr. M. L. Harris, of Chicago, Ill.: I would like to say a few words, first, in regard to the etiology of gall-stones. I agree with the essayist that infection is always the prime causative factor of gall-stones. Gallippe first called attention to this very important fact, and since then gall-stones have been produced experimentally by Gilbert and others, who have shown that infection is absolutely necessary. The work done by Fournier in the cultivation of germs from gall-stones has demonstrated that they are present. Infection, then, is the first and essential factor in the production of gall-stones. Germs act in the following manner: First, we have produced a cholangioitis or cholecystitis, followed by exfoliation of the epithelium lining the ducts or the gall-bladder. I have myself demonstrated this. We have exfoliation of large masses of epithelial cells; these cells have undergone coagulation necrosis and break up into granular matter. This granular matter is held together by the zooglea masses of the bacteria that are present. These masses in turn form the nuclei of gall-stones. The bacteria act upon the bile, changing its reaction and causing precipitation. This has been worked out experimentally by Herzog, of Chicago, who has proven that the bacteria, developing in the bile, disassociate the salts of the bile, or the glycocholate of sodium, and change the bile from an alkaline to a neutral or acid reaction. As soon as we get this disassociation of the bile salts with the production of acid bile, the cholesterin and the bilirubin become precipitated, and the precipitate forming about the nuclei produce the gall-stones.

A second important factor in the production of gall-stones is bile stasis. This accounts for the extraordinary large proportion of cases of gall-stones in women as compared with gall-stones in men. This bile stasis is brought about by the constriction of the waist, not simply by depressing the gall-bladder, but by pressing it backward, in this manner producing flexion at the neck of the gall-bladder, where we have the normal S-shaped flexure in the duct. This S-shaped flexure may be so increased as to produce stasis of bile in the gall-bladder, and the stasis permits not only precipitation, but retention of the precipitate until the stones acquire considerable size. If we have no stasis, so that the bile flows in and out rapidly and freely, even masses of bacteria would be washed out and no gall-stones would form. In no organ of the body, where we have secretion and an outlet, do we find a precipitate of salts, or any matters held in solution, except under the influence of some pathologic process. Animals can be fed on cholesterin without producing a precipitate. It is important to determine the patency of the ducts. This we can demonstrate by irrigating through them, as I have done a number of times with water, or by distending them, as Van Hook has suggested, with air. He

has devised a little air pump by means of which the gall-ducts may be distended from the gall-bladder to the hepatic ducts, so they may be easily palpated as far as the hilus of the liver. We can demonstrate the patency of the ducts, but we cannot demonstrate that the mucosa is normal. If we close the gall-bladder and the mucosa is abnormal, as it usually is, we may have a recurrence of the stone formation, as has been reported by Kehr and others. Primary suture of the gall-bladder is very seldom proper.

Another condition which I think calls for a little different procedure is when we find a contracted gall-bladder with adhesions. These cases, in my opinion, call for cholecystectomy. It is impossible at times to bring the gall-bladder to the surface, nor can we depress the peritoneum to reach the gall-bladder. These cases should be treated at once by a cholecystectomy, for by so doing we remove the chronic infectious gall-bladder and the thickened walls and adhesions about it. If we simply drain it, we still have adhesions which will give us trouble, as I have had to operate on such cases a second time. As an old chronic inflamed appendix will give trouble, after we have evacuated the abscess about it, so will an old contracted, infected gall-bladder give trouble. Therefore in these cases I would recommend complete cholecystectomy as a primary operation.

Dr. J. R. Hollowbush, of Rock Island, Ill.: It has been my fortune to have operated on a number of cases of gall-stones by different methods. The first case I operated on was one of carcinoma of the gall-bladder, and notwithstanding the walls of the gall-badder were friable, I sutured the gall-bladder and dropped it back into the abdominal cavity, and the patient recovered. I have wondered ever since how the sutures held. Some few months after that I operated on a case similar to the one described by Dr. Bernays in which the gall-bladder was perfectly normal in appearance, covered by glistening, healthy peritoneum. I performed what is known as the ideal operation, and the patient recovered. Since then it has been my custom to bring up the gall-bladder and stitch it to the parietal peritoneum, introducing a large rubber drainage tube for the purpose of washing out the gall-bladder and draining it. As Dr. Eastman says, no matter how thoroughly you may palpate the gall-bladder and ducts with your fingers, wash out the bladder until the water returns clear. After two or three weeks I have had small pieces of gall-stones come out through the drainage tube. So I am satisfied, no matter how careful we may be during the operation, we are not safe in closing the gall-bladder at the time. As to the operation of cholecystectomy, it seems to me the same objection could be raised to it, in that we cannot discover a stone in the ducts, and if you should force air in through the ducts up into the liver, are you sure you are forcing air into the duodenum? There may be a small stone in the duct which escapes observation, and after amputating the gall-bladder you have a worse condition of affairs. The operation which secures greater safety is by bringing up the gall-bladder, stitching it to the parietal peritoneum, and introducing drainage.

Dr. James E. Moore, of Minneapolis, Minn.: I am pleased

to have heard Dr. Davis' paper, which I think voices the sentiment of surgeons to-day in a practical way. There are one or two points that I would like to touch upon, and the first is with reference to the different methods of infection which the essayist mentioned. I believe that we are likely to overestimate the number of infections that occur through the common duct. Experiments have conclusively proven that the common duct can be ligated and infection occur above the ligature; in fact, a ligature thrown around the common duct of a dog will be followed by infection through the other sources that the doctor has mentioned. The practical point I desire to bring out is that we are too earnest in hunting for gall-stones in this vicinity and are apt to neglect cholecystitis. I hope the time is not far distant when the men who are operating daily will operate about as frequently in the northeast corner of the abdomen as they do now in the southeast corner. I hope, too, that the casual operator, who only operates when he is obliged to, will not follow suit in this regard, because operations in the vicinity of the gall-bladder are such as should not be undertaken by the occasional operator. They require a great deal of skill which the occasional operator cannot possibly possess.

My attention in the past three years has been called to several cases of cholecystitis in which I believed no gall-stone was present. I have had the pleasure of operating on some of them and have demonstrated conclusively that the inflammation was due to infection without the presence of gall-stones. This is the point that I arose to make: It is our duty as surgeons to call the attention of physicians to the fact that dangerous inflammations of the gall-bladder are very common, the proper treatment of which is a surgical operation, such as has been laid down by the essayist, and I sincerely hope that as we meet together each year there will be more and more of those cases reported in which there has been a sudden exacerbation of all symptoms, as in typhoid and other continued fevers, and that the surgeon has been called in, has opened the gall-bladder, drained, and saved the patient.

Dr. Joseph Eastman, of Indianapolis, Ind.: I wish to speak briefly of the point which Dr. Mayo mentioned, and I believe it is a step in advance, even in cholecystotomy to get rid of the infected mucous membrane. I believe it will encourage shrinkage of the gall-bladder and its atrophy into a fibrous string which is revealed post-mortem. It is certainly an ingenious step in the right direction, and will make our operations in the future on the gall-bladder much more satisfactory.

Dr. Davis (closing the discussion): After such a generous and able discussion of my paper, I shall refrain from making any extended remarks. However, there are two or three points that I should like to mention, and one is in the nature of an explanation. In preparing the paper I had in mind the importance of dwelling upon the technique in more or less detail, but I found that in order to do that the paper would be so long as to put you all to sleep, so I omitted anything in regard to the technique except drainage. In my original draft of the paper I had notes in regard to Dr. W. J. Mayo's new operation of removing the mucous mem-

brane of the gall-bladder, which I heartily endorse, but I had not the time to go into the subject of technique, hence its omission.

I infer from the remarks made by Dr. Eastman that he supposed I had recommended anastomosis between the gall-bladder and duodenum as a regular practice, because the case I reported was one of that kind. It is the only operation of the kind I have ever done. My surgical work in this line has been limited to seventeen cases, and in all of the others, except one, I did a cholecystotomy and established drainage. In the case reported there was a fibrous cord at some place in the common duct, and there had doubtless been a stone impacted there; consequently I resorted to the operation mentioned.

In general, my idea is to drain through the fundus of the gall-bladder. I was very glad to hear Dr. Moore speak of operating in cases of infection of the gall-bladder. I feel that way, although I scarcely had the courage in my paper to promulgate the idea very emphatically, believing that it would meet with a good deal of opposition, and I felt that you would think me too radical. I operated on a case of that kind last week where I had an old infection to deal with. It was a catarrhal trouble, not an acute empyema of the gall-bladder. It had been going on for some time. The indications are thus far that the patient is going to make a good recovery. Pain has ceased. I found a great deal of thick, tenacious mucus. I think it was more or less cholesterin that had caused the pain which simulated gall-stones.

In regard to ideal cholecystotomy, I am glad to hear that my statement has been endorsed by all of you. I did the operation of Czerny, which has been referred to by Dr. Bernays, in one case, and was sorry for it. It was done before I had come to realize the importance of drainage. I drew the gall-bladder up to the fundus and sutured it, and as in a previous case I had a good deal of trouble in getting the fistula to close, it occurred to me that it would be a nice thing to turn the edges of the wound in and unite them, establishing drainage of the outside of the wound, so that if it did leak, there would be no harm. I did it, it did not leak, but it was some time before my patient fully got to the normal condition. Ever since then there has been occasionally more or less pain, and I feel yet that if I had drained in the usual way and had established free drainage, and had kept the fistula open until all irritation had subsided, the patient would have been better off.

HOW TO PREVENT AND HOW TO TREAT UNUNITED FRACTURES.

By A. C. BERNAYS, M. D.,

ST. LOUIS, MO.

My experience is based on notes of twenty cases of ununited fractures of the femur, twelve of the humerus, eight of the patella, eleven of the tibia, six of the ulna, one each of the radius, the metacarpal bone of the index finger, the clavicle, and two of the inferior maxilla. These were treated in a surgical practice of twenty-three years. The vast majority of all cases is due to a misunderstanding and a consequently improper or rather insufficient method of treatment. The impropriety and the insufficiency lie in the fact that the methods which were applied did not give the complete rest required to get union by bony consolidation. The greatest stress must be laid upon this point, and it must never be forgotten that repair takes place in all diseases or injuries most quickly and satisfactorily under the influence of rest. When complete rest can be given to the injured tissues, repair takes place in a normal way, without fever or constitutional or local disturbances. Hilton, as long ago as in 1867, proved in a most careful study that under the influence of rest there is absence of pain. His little monograph "On Rest and Pain" is one of the classics in English medical literature. I will go a step farther and will say that the reason why the aseptic and antiseptic methods of wound-treatment are better than all previous or older methods is because they keep away from wounds the most mischievous agents of unrest that can possibly affect wounds—bacteria or their products. To translate the phrase, "to give rest," into practical surgery must always be the chief aim of the art of surgery. The surgeon who practices his art in such a manner as to secure the most perfect rest possible, under the circumstances, for the diseased or injured parts which he treats, will be the most successful surgeon.

In the discussion Dr. Bernays said that he believed the most valuable part of his paper, and that part which would attract most attention, was the advancing of this observation. He went on to show that the entrance of bacteria or their toxic products into wounds was responsible for that commonest form of unrest which is known as wound infection, inflammation and suppuration. In the presence of these we have abnormal, painful, and slow healing, because the tissues are not at rest. They are irritated and are kept at work incessantly eliminating the poisonous irritating substances. In their absence we have normal, painless, and quick healing. This is the real reason why the antiseptic, or rather the aseptic, method of wound treatment is the best. It is best because it gives most rest.

All cases of ununited fracture which are due to insufficient methods of treatment are curable; they can be cured by proper methods. The latter must insure the most complete rest, and, as a matter of course, those methods which fail to give the amount of rest necessary to produce or permit of repair must be given up. All cases of non-union which are not cured by proper approximation and immobilization are incurable and are due to some unknown or to some of the well-known constitutional vices, such as the different forms of malnutrition, cachexia, and debility. It is clear that approximation and apposition, followed by proper fixation and immobilization, are the methods which we employ to achieve rest in simple fractures. The same principles govern the treatment of compound fractures, but in addition we make use of such methods as will insure asepsis by means of antiseptics alone, or by means of antiseptics and drainage. Asepsis insures tissue-rest, keeps away the irritants known as bacteria and toxins. An aseptic compound fracture can be treated like a simple fracture, but one must be very sure that there is no infection of the wound before closing it up without providing for drainage. The cases in which this is permissible have been very rare in my experience. The following were

the theses formulated by the doctor in closing his paper:

First—The antiseptic and aseptic methods of wound treatment are better than all previous methods, because they help to insure physiological rest to injured tissues by preventing the condition of unrest known as infection.

Second—Non-union of a simple fracture is always due to a constitutional vice, if it follows after proper and long-continued approximation and fixation. (*a.*) Non-union can, therefore, always be prevented by proper approximation and immobilization, in the absence of a constitutional vice. (*b.*) It follows, then, that an unknown or a known form of constitutional vice must exist in cases where non-union results after proper approximation and immobilization of a fracture. (*c.*) It is furthermore clear, and must be maintained by all surgeons, that if proper approximation and immobilization are practiced and continued for a long time, the attending surgeon cannot be held responsible for a resulting non-union. The non-union must have been due to an existing constitutional vice which we cannot always recognize.*

Third—If after a certain length of time the dressing, cast, splint, or apparatus is removed and non-union is found, there are only three conditions possible: (*a*) The dressing, cast, splint, or apparatus failed to properly approximate and fix; (*b*) the time of treatment was too short; (*c*) there exists a constitutional vice. The first of these three possibilities is by far the most common, and is the cause which, when recognized, can be easily removed.

Fourth—After the use of any of the known methods of treatment of ununited fractures, be they the simple bloodless friction of the ends or any of the bloody ope-

* I have seen a few cases of non-union in children and young people in which the well-known forms of constitutional defects or vices could apparently be excluded, and in which non-union was evidently due to some general pathological condition of which we have no knowledge. There was simply no reparative action around the ends of the broken bone at any time after the accident, in spite of the most persistent treatment. During periods of time extending over several years all rational methods of treatment proved unavailing and there never was an improvement of the flail-joints.

rations, such as drilling, nailing, wiring, sawing, or clamping, approximation and immobilization must be maintained in order that bony union or consolidation may take place.

Fifth—The so-called ambulatory treatment of fractures of the lower extremity, while often giving good results, will be followed by delayed union or non-union more often than the treatment in bed, because of failure to secure proper rest.

Sixth—In old cases of non-union of simple fractures it is a good plan to save all of the chips or sawings of the bone which are removed when preparing and shaping the ends, and to replace them between and around the fragments or ends of the bone before removing the Esmarch bandage. After the tourniquet is removed, the whole wound and the spaces between the fragments and chips will be filled with blood, and if one has been aseptic the best plan will be to close the wound entirely and put to rest with a view of leaving the dressing untouched for a period of from seven to ten weeks.

Seventh—In cases of fracture of the long bones, I believe that the use of an anesthetic for the purpose of getting perfect apposition and fixation is indicated.

Eighth—The old rule that the joint above and below the fracture must be included in the immobilizing apparatus, cast, or splint, can never be safely broken. It is a good rule, and should always be observed in the treatment of delayed union or ununited fractures.

DISCUSSION.

DR. JOSEPH EASTMAN, of Indianapolis, Ind.: If there is anything I have tried to forget in the last fifteen years it is bone surgery. The doctor speaks in defiance of all authority, and perhaps the principle involved in his point is a good one. However, there are some old authorities who have advocated certain surgical principles which will live until time shall be no more. When I was a teacher of surgery and anatomy I used to get my lessons out of Frank Hamilton's book on the "Principles and Practice of Surgery." There are principles in that book that will live forever, and Dr. Bernays spoke of one point which is fully set forth in the first page of Hamilton's book. If I remember rightly, it begins something like this: Broussais wrote more than a century ago that it was of inflammation of one or more

the theses formulated by the doctor in closing his paper:

First—The antiseptic and aseptic methods of wound treatment are better than all previous methods, because they help to insure physiological rest to injured tissues by preventing the condition of unrest known as infection.

Second—Non-union of a simple fracture is always due to a constitutional vice, if it follows after proper and long-continued approximation and fixation. (*a.*) Non-union can, therefore, always be prevented by proper approximation and immobilization, in the absence of a constitutional vice. (*b.*) It follows, then, that an unknown or a known form of constitutional vice must exist in cases where non-union results after proper approximation and immobilization of a fracture. (*c.*) It is furthermore clear, and must be maintained by all surgeons, that if proper approximation and immobilization are practiced and continued for a long time, the attending surgeon cannot be held responsible for a resulting non-union. The non-union must have been due to an existing constitutional vice which we cannot always recognize.*

Third—If after a certain length of time the dressing, cast, splint, or apparatus is removed and non-union is found, there are only three conditions possible: (*a*) The dressing, cast, splint, or apparatus failed to properly approximate and fix; (*b*) the time of treatment was too short; (*c*) there exists a constitutional vice. The first of these three possibilities is by far the most common, and is the cause which, when recognized, can be easily removed.

Fourth—After the use of any of the known methods of treatment of ununited fractures, be they the simple bloodless friction of the ends or any of the bloody ope-

* I have seen a few cases of non-union in children and young people in which the well-known forms of constitutional defects or vices could apparently be excluded, and in which non-union was evidently due to some general pathological condition of which we have no knowledge. There was simply no reparative action around the ends of the broken bone at any time after the accident, in spite of the most persistent treatment. During periods of time extending over several years all rational methods of treatment proved unavailing and there never was an improvement of the flail-joints.

rations, such as drilling, nailing, wiring, sawing, or clamping, approximation and immobilization must be maintained in order that bony union or consolidation may take place.

Fifth—The so-called ambulatory treatment of fractures of the lower extremity, while often giving good results, will be followed by delayed union or non-union more often than the treatment in bed, because of failure to secure proper rest.

Sixth—In old cases of non-union of simple fractures it is a good plan to save all of the chips or sawings of the bone which are removed when preparing and shaping the ends, and to replace them between and around the fragments or ends of the bone before removing the Esmarch bandage. After the tourniquet is removed, the whole wound and the spaces between the fragments and chips will be filled with blood, and if one has been aseptic the best plan will be to close the wound entirely and put to rest with a view of leaving the dressing untouched for a period of from seven to ten weeks.

Seventh—In cases of fracture of the long bones, I believe that the use of an anesthetic for the purpose of getting perfect apposition and fixation is indicated.

Eighth—The old rule that the joint above and below the fracture must be included in the immobilizing apparatus, cast, or splint, can never be safely broken. It is a good rule, and should always be observed in the treatment of delayed union or ununited fractures.

DISCUSSION.

Dr. Joseph Eastman, of Indianapolis, Ind.: If there is anything I have tried to forget in the last fifteen years it is bone surgery. The doctor speaks in defiance of all authority, and perhaps the principle involved in his point is a good one. However, there are some old authorities who have advocated certain surgical principles which will live until time shall be no more. When I was a teacher of surgery and anatomy I used to get my lessons out of Frank Hamilton's book on the "Principles and Practice of Surgery." There are principles in that book that will live forever, and Dr. Bernays spoke of one point which is fully set forth in the first page of Hamilton's book. If I remember rightly, it begins something like this: Broussais wrote more than a century ago that it was of inflammation of one or more

organs essential to life that a large per cent. of the human family sooner or later perished. Then he states that inflammation never exists without irritation. Irritation can go on and produce death without inflammation, but inflammation never without irritation. So the principle advocated by Hamilton is again brought out by the doctor. It is an irritation, either chemical, mechanical, or microbic, which he says antisepsis and asepsis seek now to avoid, by getting rid of germs and irritating sources of all kinds. However, the principle the doctor advocates is a good one. As I have forgotten a good deal about this subject, I would not be considered an authority, but whether or not his cases were benefited by putting back the bone chips, or whether he is positive that they were as aseptic as he would like them to be, is open to question. But there is no "going behind the return board" when he said that his cases made good recoveries. I do not think any of us can be too positive as to our asepsis. Antisepsis and sterilization are, to a greater or less extent, relative terms, and can never be as absolute and reliable as we would wish them to be, except we subject things to a temperature of 212°, or to steam, or to dry thermal sterilization. I cannot be positive of sterilization unless it be thermal. If the doctor submitted the bone chips to thermal sterilization, he may have reasonable assurance of their being aseptic. The doctor and I have been very friendly for many years, and we always take occasion to differ with each other whenever we possibly can.

DR. B. B. DAVIS, of Omaha, Neb.: After hearing the paper of Dr. Bernays, there is a temptation on my part to say that it is a good thing, and I believe the whole of it. However, before I feel competent to discuss it, I ought to have some of the points trickling through my mind for a week or so in order to think them over. But I do feel that Dr. Bernays has struck a very important point in what he has said with reference to rest. I believe he is correct when he says that the majority of cases of delayed union and non-union are due to incomplete rest. The apparatus was not correctly applied, and I think that those of us who have not had so much experience are likely to resort to operative means too soon, and that in those cases, if we would do as the doctor suggests, namely, use rest for a long time and see that it is perfect, our results would be better.

With reference to the use of bone chips, while I do not like to condemn them at all, I have not used them for several years. If, as Dr. Eastman says, we can feel that the bone chips are absolutely sterile, they will undoubtedly do good. I have had one or two experiences with something else than bone chips, namely, a sponge, as recommended by an Edinburgh surgeon, who first began to use them for the purpose of filling up cavities. I tried it and the result was very good. In one case I had to remove some bones of the foot, which would practically destroy the arch of the foot unless something was done. I therefore used some sterilized sponge, after having satisfied myself that it was sterile, and the result was excellent. It simply acted as a framework upon which the osteophytes did their work, and I think bone chips serve the same purpose.

DR. CHARLES H. WALLACE, of St. Joseph, Mo.: I came to

this meeting of the association merely as a spectator, without any idea of being asked to participate in the discussion. However, I was very much interested in the paper of Dr. Bernays. I am doing general surgery, and am especially interested in this class of work. Of course, being connected with railroads and street-car companies, I have met with the kind of injuries under discussion. I heartily agree with Dr. Bernays in regard to rest, and if there is any one thing in medicine that requires common horse-sense, so far as treatment and the abandonment of fine-spun theories and intricate apparatus are concerned, it is the treatment of fractures. Whether I have been exceedingly fortunate in the cases I have had, or whether it was due to the simplicity with which I treated them, I must say that I have not had a bad result from a fracture, and have never had a damage suit. I attribute whatever success I have obtained in this regard to the principle of rest, as laid down by the essayist.

Another principle I have followed is not always to put fractures up in a dressing and leave them for six or eight weeks to see the result, but in cases where I apply casts, I saw the cast and remove it and reapply it by a bandage so I can look at the injured part from time to time and see how things are progressing. This can be done without interfering with union, and if there is faulty repair going on, with shrinking of the muscles and tissues from pressure, the cast can be tightened and motion prevented.

DR. J. W. COKENOWER, of Des Moines, Ia.: In regard to the use of bone chips, I have tried them in one or two cases. In one instance they failed, due to the fact that they were not thoroughly aseptic, and for the reason that it is almost impossible to know positively whether they are aseptic or not, I have found that other means will answer the purpose equally as well.

There is no question with regard to immobilization and putting the parts in apposition and urging rest. However, in a case which recently came under my observation I believe there was too much rest. In this case there was a fracture of the tibia and fibula; the fragments were put in apposition in a plaster of Paris cast, immobilized, and were allowed to remain so for three months, at the end of which time the cast was removed, but union had not taken place. The physician applied another cast, which was allowed to remain two months, then taken off, and still there was non-union. Then I was consulted with reference to the practicability of some mechanical appliance for non-union. After obtaining a full history of the case, and recognizing the principle that there can be no union of diseased tissue unless there is inflammation, or no proliferation of the cells from any protoplasmic material, I applied a compress above the knee, had the case under observation for several days, and set up an inflammation by lessening not only the return circulation, but the blood to the parts, and, as a consequence, in due time I obtained union. I believe that union failed to take place in this case before it came under my observation on account of the fact that there had never been any irritation or friction to produce the necessary inflammation which should be brought about to insure union, even though the fragments are in apposition.

DR. M. L. HARRIS, of Chicago, Ill.: The statement of Dr. Bernays as it comes to my mind is this: If the fractured ends be placed in accurate apposition and properly maintained there for a sufficient length of time, if the patient be healthy, union will take place. With these facts we must all fully agree. We know that in the majority of cases where union fails to take place this has not been accomplished, and in many cases we are absolutely unable to tell if the fragments be in accurate apposition or not; the soft tissues may so intervene as to prevent apposition of the fragments and consequently interfere with union. Further than this, I do not see that the doctor has come any nearer a solution of the question. In the first place, he has not told us what constitutes the vice that prevents union. We all recognize tuberculosis, syphilis, malaria, and all infectious diseases, etc., which we may class as vices, but so far as our knowledge goes, these diseases do not interfere in many cases with union of fractures. In syphilitics fractures unite almost always without any trouble. What we wish to know is what constitutes the vice that interferes with union. Let us take a young man, born and raised in the country, without disease of any kind; never had syphilis; no history of tuberculosis; never had malaria. He sustains a fracture, the fragments are brought into apposition, and union fails to take place. What constitutes the vice? I have had such a case in a young man of 18, in perfect health, so far as I was able to determine, in every way. He had never had syphilis, tuberculosis, or malaria; had never been sick with any of the infectious diseases. The fragments were put into apposition in this case by open method, inasmuch as union had failed to take place after a long course of fixation treatment. The limb was put up in a cast and properly fixed for weeks and weeks, yet union failed to take place. I worked over this patient for a year; I know the fragments were in accurate apposition, and everything was done to encourage union, yet union did not occur. What constituted the vice? Why did we not get union? In the case I speak of union failed to take place after a year or more of treatment. I then told him to go about, and in a few months after going about on the leg he had nice union. I would like to know what constitutes the vice.

DR. E. HORNIBROOK, of Cherokee, Ia.: While I agree in a measure with the eminent gentleman who read the paper, still as a learned society some of the statements ought not to go unchallenged, and I rise to ask if it would not be wise to reconsider some of the positive and rather misleading opinions that have been advanced. The opinion that when the fragments of bone are put in accurate apposition and kept a sufficient length of time, union will take place, unless there is some constitutional vice, is open to so many objections that it would be dangerous to have it go in the country and be quoted in courts of law as bearing the stamp of this learned body. I have practiced medicine and surgery for a good many years, and have seen many cases of ununited fractures. I have seen cases where rest, immobilization, and all the dexterity of the surgeons were used to bring about union, and union has not taken place. I have operated upon these

cases, one particularly, in which there was no cachexia, but in which there was non-union for some years. When I removed the ends of the bone I found one end of the bone was composed of sandy material, and the periosteum was thickened. He had been treated by one of the most competent surgeons in this state, the parts were kept in perfect apposition for six months, but union did not take place, and still there was no cachexia. My opinion was that in this case, like many others, the traumatism was so great that the vitality of the bone was destroyed to such an extent that union was impossible. Is it not too broad and positive a statement to say that union will always take place when there is no cachexia or vice, if there is proper immobilization and apposition of the fragments? I would ask Dr. Bernays, in the interest of the profession, to modify that statement, as I believe it is too sweeping and will do a great deal of harm.

Dr. James E. Moore, of Minneapolis, Minn.: While I agree with the learned gentleman who read the paper, I believe it contains some false and dangerous doctrine. While I agree that in a case in which the fragments are properly adjusted and maintained in apposition for a sufficient length of time in a healthy individual union will take place as a rule, still I am just as firmly convinced that in some individuals in whom we can find no trace of taint of any description, in whom we know the fragments are absolutely in apposition, union will not take place. In a case, for instance, like the one mentioned by Dr. Harris, I think it is dangerous to accept the axiom, if we may consider it such, and I hope the other members of the association will raise their voices against the axiom that the essayist lays down, because of its danger to every man here. Supposing his statements be accepted as true, and a case is brought into court, the court will naturally say, as well as the jury, that the fault must have been due to the surgeon, because authority says that if the fragments had been properly adjusted union would have taken place. I am satisfied that there is something in some individuals which prevents union, although we have no sign of what it is.

A word or two with reference to rest. I am a great advocate of rest. I have treated a great many cases of joint disease from time to time, and rest is a great remedy. It is likwise a great remedy in the treatment of fractures. There is a great deal of difference as to the manner in which we view the importance of rest. What one may consider rest is not rest at all to another man. Some practicing surgeons will take plaster of Paris, or pieces of stove-pipe, or any old thing, and get good results in treating fractures because they put the fragments in accurate apposition and hold them there. Even such men will have their failures. On the other hand, there are surgeons who will do everything they possibly can for the treatment of their cases of fractures; they will make their own splints, apply their own plaster of Paris, and shingles, and yet have more than their share of failures because they do not get rest.

The gentleman on my right [Dr. Wallace] brought out a practical point in regard to fractures. It was my privilege

to be associated in business with a most excellent physician who got more than his share of bad results from fractures, and in following him and working with him I learned that he was content with his first dressing. He did not give patients anesthetics, as we do now. He adjusted the fragments nicely, was very careful and conscientious in applying his splints, and left them on for four weeks, the consequence being that he had more than his share of failures, because we know that splints adjusted to-day snugly will be loose tomorrow.

In the use of plaster of Paris, for instance, it is the hobby of many men to put a large wad of cotton underneath the plaster of Paris dressing; the consequence is the fragments are not at rest, but are flopping about. Such practice brings the surgeon and the profession into disrepute. The suggestion made by Dr. Wallace is eminently practical, namely, opening up the dressings and examining the parts have a tendency to bring about rest, which is the thing we are after.

DR. BERNAYS (closing the discussion): I think that the discussion has rather strengthened my position instead of having weakened it. I am not a prophet. I do not know what the vice is, nor have I the slightest idea of what it is. I do maintain, however, that in any case of fracture, where the fragments are properly approximated and immobilization is practiced, there will be union unless there is that vice, and in any court of law I will swear to that. I feel reasonably sure that I could make other gentlemen testify exactly the same way if I had them on the stand and carefully examined them. I will always testify that union will take place if there is proper apposition and immobilization, without the presence of this vice. We do not have to tell the court or jury what that vice is; we do not know. No man is obliged to tell what he does not know, or to do more than he can, and when a surgeon approximates the broken fragments and maintains them in apposition and immobilizes the limb, then he has done all he can do, and in any court we would testify that such a man has done all that could be done, and no jury would hold him responsible for the constitutional vice which must have been there, for in its absence union would have taken place.

With reference to bone chips, I think some of the gentlemen have misunderstood me. Reference was made to Senn's decalcified bone chips, and that he has abandoned their use. I was speaking of fresh chips of the patient's own bone, and not of bone chips that we can buy in a surgical instrument store. Dr. Senn's bone chips have never appealed to many surgeons, and they were never used by many of them, and he told me himself that he had given them up. When I told him the results of using the patient's own bone chips, he simply answered that he did it long ago; that is, he took chips from the patient's own bone, packed them into the wound, and closed it up. Of course, one must be thoroughly confident of asepsis in order to do that. In order to put the bone chips back there must be no suppurating sinuses near the seat of operation. But where there is no sinus, and only a large mass of soft callus, I think the packing of

small chips between the ends of the bone, then giving complete rest, will be followed by consolidation of the fragments unless there is a constitutional vice.

In answer to the remarks of Dr. Cokenower, I have only a few words to say. The doctor's view, that inflammation is necessary for repair, does not meet with the views that I have been taught and have found to be true, and the association will pardon me for consuming a few minutes' time to elucidate that point more clearly. Before we knew anything about infection, we believed that inflammation was necessary, but now, since we know that there is no inflammation beyond the first stage, except by infection, the doctor cannot very well maintain the position that inflammation is necessary. The best experiment to prove that inflammation is unnecessary to normal repair is the one we make in our histological laboratories on dogs, which most of you have seen made many a time in your private practice. Take a hammer, break the bones of the leg into comminution, a hundred pieces or more, without breaking the skin. Barring infection, in a healthy person who has no constitutional vice, you may so comminute the bones that there will be, so to speak, a bag of bones, and after putting them to rest there will in time be complete consolidation and repair without inflammation. That is what we aim at. That is why we practice asepsis, and we practice asepsis because it gives rest.

The point in my paper which I think will cause a great deal of discussion in medical literature is the explanation I gave accounting for the beneficial effects of asepsis. I have never heard such an explanation before, but it impressed me very deeply, and it has been working in my mind for three or four years, and the real reason why asepsis and antiseptic methods are better than all previous methods is because they give rest; it is because they exclude those substances known as toxins, as ptomaines, as bacteria and their products, some of which are still unknown and unnamed, and when they are kept away repair goes on without inflammation of any kind.

ACUTE SUPPURATIVE ARTHRITIS OF CHILDREN.

By JAMES E. MOORE, M. D.,

MINNEAPOLIS, MINN ,

PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF MINNESOTA.

I wish to call attention to the acute inflammation of joints, variously described under the titles "Acute Suppurative Arthritis of Infants," "Epiphysitis," and "Acute Ostitis of Growing Bone." I chose this subject because these cases are not generally understood,

and many joints and lives are sacrificed on the altar of our ignorance.

These inflammations occur, as a rule, either as complications or sequels of other diseases, and may begin either as a synovitis, an epiphysitis, or an osteomyelitis. The majority of cases begin as an osteomyelitis. When accompanying the exanthemata, diphtheria, or typhoid, they are usually due to a streptococcus infection. Cases complicating pneumonia have been reported in which the diplococcus was the cause. The joints most commonly affected, in the order of their frequency, are the hip, knee, shoulder, and elbow.

In the synovial variety the symptoms are as a rule comparatively mild. There is local heat, swelling, and tenderness, with a temperature of from 101 to 102 F. When the joint is quiet, the pain may not be severe, but the slightest motion will cause severe pain. When it occurs as a complication of some fever, the diagnosis is comparatively easy, but when it comes as a sequel or without known cause, it may be difficult. In the latter instance the febrile condition accompanying the joint inflammation is frequently mistaken for an essential fever.

When a decided rise of temperature or a sudden attack of pain occurs in a child suffering from, or recently recovered from, any of the above-mentioned diseases, all of its joints should be carefully examined. This precaution is especially indicated when the child is too young to call attention to the seat of its pain.

The most common error in this as in all other joint inflammations is to make a diagnosis of rheumatism. The latter does not remain in any one joint to the exclusion of others for any length of time, and it is not a suppurative affection.

Suppurative synovitis as a complication or sequel may be polyarticular. I have at the present time a patient who had suppuration of one elbow and of the sacro-iliac synchondrosis, as a sequel of typhoid, but it is not to this very grave form of disease, formerly known as pyemia, that I wish to call attention.

Suppurative arthritis may be confounded with the bone affection of infantile scorbutus, but in the latter

careful examination will demonstrate that the soreness is in the shaft of the bone. When in doubt as to the character of the contents of a swollen joint, one should draw off a small amount with an aseptic hypodermic needle. When this disease is recognized and promptly treated, the prognosis is good, but when neglected, the joint surfaces are destroyed and the patient's life endangered. When the diagnosis is thoroughly established, the only treatment to be considered is free incision and drainage. The following is a typical case of suppurative synovitis:

In January, 1895, Dr. Disen, of Minneapolis, referred to me a child 4 years old, who had recently recovered from an attack of measles, and was then suffering from an acute inflammation of the left knee-joint. The child was suffering some pain constantly and very great pain on motion. The swelling extended up and down beyond the limits of the joint, but was most marked at the joint. This diffuse swelling is quite characteristic of the streptococcus infection. There was marked local tenderness and a temperature of 102 F. The color over most of the limb was normal, but at a point on each side of the patella there was a dull, red spot. The joint was flexed and the patient kept the limb with its outer side resting on a pillow.

The only difficulty was to differentiate between a suppurative synovitis and an osteomyelitis. I based my diagnosis of synovitis on the facts that the beginning was rather subacute, the temperature comparatively low, and that the swelling began in the joint as soon as the child complained.

A free incision was made on each side of the patella and rubber drainage-tubes were introduced, and notwithstanding the fact that the joint seemed completely disorganized, the child made a prompt recovery, with perfect motion in the joint.

The openings in these cases should always be free. It is a mistake to fill them with gauze without drainage-tubes, because gauze will not drain pus. It is always wise to explore these joints with a finger, for fear the original trouble may have been an osteomyeli-

tis, as in that case more operating would be necessary. Irrigation with a warm normal salt solution is the best means of cleansing the joint. The dressing should be a large moist one, and should be changed frequently.

Prominent writers on joint diseases, as Macnamara and Howard Marsh, whose writings were published in the eighties, gave extended descriptions of epiphysitis as a disease of frequent occurrence in childhood. More recent writers, however, have demonstrated that while occasional undisputed cases of acute epiphysitis or epiphyseal osteomyelitis do occur, the vast majority of these cases are osteomyelitis beginning in the diaphysis just outside of the epiphyseal line. In these young patients the epiphyseal cartilage is very tender and may easily be perforated, but in the hip, the capsule of the joint extends beyond the cartilage, so that a perforation of the diaphysis close to the cartilage allows the escape of pus into the joint. When the disease does begin in the epiphysis it extends quickly to the joint, so that the joint symptoms soon overshadow the bone symptoms. It is well to remember, in this connection, that it is quite possible to have a sympathetic, catarrhal inflammation of a joint accompanying an osteomyelitis of the shaft, for what would be the only proper treatment for a suppurating joint would in this instance be a grave mistake.

Of these inflammations beginning as an osteomyelitis there are two well-marked varieties: one in which the symptoms are comparatively mild and which under proper treatment makes a complete recovery; and another in which the symptoms are those of an acute osteomyelitis with added acute joint symptoms, which, unless promptly and vigorously treated, results in more or less permanent injury to the joint. The latter variety may cause ankylosis, or there may be shortening and loose-jointedness from separation of the epiphysis. Between these two extremes are many grades of the disease, so that it is not always easy to classify a given case; my personal experience, however, teaches me that the prognosis after a timely operation is better than the findings would seem to justify.

In the mild variety the pain is not very severe, the temperature is not very high, and the progress of the disease is comparatively slow. Swelling comes on gradually, and the little patient refuses to use the joint. There is local heat and tenderness. The patient loses appetite and flesh. This type occurs most frequently in the hip-joint, and is unaccompanied by redness. The skin is white and the blue veins may become quite prominent. I have found it sometimes difficult or impossible to differentiate this disease from a rapidly growing sarcoma, until I had used the exploring syringe. This disease has very commonly been mistaken for tuberculosis, and has sometimes been pronounced typhoid. The prognosis in this class of cases is good when the disease is recognized and promptly treated, but when neglected, the joint is destroyed and there is more or less destruction of bone, which may cause shortening. The only treatment is free incision and drainage. The following is a typical case of the kind:

May 2, 1898, I was called by Dr. Benjamin, of Minneapolis, to see H., aged 15 months, who at that time was comparatively free from pain when quiet, but suffered greatly when the left thigh was moved. The thigh was slightly flexed, was white and swollen, with enlarged veins over the surface. There was local heat and tenderness. The child was pale and emaciated, and lay perfectly quiet, making no effort to move the limb. At this time the temperature was about 100 F. The history given by the doctor was that the child had been perfectly healthy until March 29, when he was called and found it with a temperature of 103 F., and a tympanitic abdomen. It was crying from pain which was seemingly in the abdomen. The temperature soon dropped to about 100 F. The child lay quiet but suffered when moved. Between two and three weeks after he was called, the left thigh was found to be flexed and somewhat swollen. The symptoms continued about the same until May 2, when I was called. We made a diagnosis of suppurative arthritis of the hip, but the thigh so closely resembled a rapidly grow-

ing sarcoma that it was deemed wise to use an exploring needle, which confirmed our diagnosis.

On May 14 the joint was opened and a large amount of pus evacuated. A drainage-tube was introduced and the child began to improve at once, and in six weeks was perfectly well. Examination on December 19, 1898, proved the child to be perfectly well, with free movement of the joint and no shortening. We have no knowledge as to the cause of the inflammation in this case.

The second variety begins as an osteomyelitis and quickly extends to the joint. The onset is usually quite sudden. There is often a chill and sometimes repeated ones followed by a temperature of 103 or 104 F. The pain is usually very severe and the whole limb is helpless. There is local heat, and tenderness and swelling soon follow, although this is not one of the early symptoms.

When the disease is in the hip, the swelling is not marked, and in a fleshy child may not be noticeable. At an early age, when the disease begins near any joint but the hip, local tenderness and sometimes swelling can be made out near but not in the joint. When it begins near the hip-joint this is not practical, owing to the distance from the surfaces of the parts involved.

Those of us who have been in the profession for fifteen years or more were taught that these were cases of acute suppurative periostitis, and the result was that our methods of treatment were incomplete and disappointing. We know now that primary suppurative periostitis is very rare, if it ever exists, and we also know that the stripping of periosteum from a portion of the bone does not cause necrosis, but that necrosis is due to an inflammation beginning in the bone marrow, and that this inflammation is always suppurative.

We all understand the necessity of early diagnosis in all cases of osteomyelitis in order that we may promptly make an opening into the medullary cavity and thus stop the ravages of the disease, but the practical point I wish to make is that in infants and young

children there is, owing to the anatomic peculiarities already mentioned, the added danger of an early invasion of the neighboring joint. By timely diagnosis and heroic treatment this joint invasion may be prevented. In all joints save the hip, the diagnosis and treatment are comparatively easy, but in the hip both diagnosis and treatment are more difficult.

When the disease is located in the lower end of the femur, there should be an early diagnosis and an opening promptly made into the center of the bone. I have never been content with drill-holes, but have always cut a window in the bone shaft, and have never had occasion to regret it. When the disease is located in the upper end of the femur, Macnamara has recommended and practiced drilling out the center of the neck through the trochanter, and reports some satisfactory results. I have never been fortunate enough to see one of these hip cases until after the joint has been involved, and have therefore had no occasion to resort to the drill, but have laid the joint wide open. I know of no instance in which free incision and drainage are followed by more satisfactory results than in these cases. Under this heroic treatment joints can be saved that are seemingly completely destroyed.

I have found that the easiest way to enter a hip-joint is from the front, through the opening recommended by Bradford in the operation for congenital dislocation of the hip. Theoretically this route is objectionable, because the pus must flow upward to get out, but practically it is perfectly satisfactory.

When called to one of these cases in which there is evidently an osteomyelitis, and in which there is also swelling of the joint, the surgeon should first aspirate the joint to ascertain whether there is a simple sympathetic or a suppurative synovitis. If serum is found in the joint, it will only be necessary to operate on the bone. If, however, pus is found in the joint, it must be opened and drained at the same time that the bone is operated on.

In the hip-joint, when the exact seat of the disease in the bone cannot be located, it is usually quite safe

to drain the joint, depending on the bone to drain itself through the joint. Unfortunately in these cases the epiphysis is often found separated.

I have met with several cases in which there had evidently been an acute suppurative inflammation of the hip-joint, which had opened itself, resulting in some cases in complete cure, while in others the sinuses remained upen on account of necrosed bone or a separated epiphysis.

The following will illustrate this class of cases. A boy, 7 years old, was brought from the country to Asbury Hospital, Minneapolis, and was referred to me by Dr. Eitel. He was walking on crutches and was believed, by the friends and doctors at home, to be suffering from tuberculosis of the hip. The thigh was flexed and on motion crepitus could be detected. He was quite spare and in evident poor health, but there was no atrophy of the thigh. We learned that about six months before he came to the hospital he was taken suddenly with severe pain in the hip and high fever, which at first were thought to be due to rheumatism and later to hip-joint disease. He continued with more or less fever and pain until he came to the city. I made a diagnosis of non-tubercular inflammation of the hip with separation of the epiphysis, and advised operation, which was readily accepted by the parents. On opening the joint I found the epiphysis separated and acting as a foreign body. It was removed and the joint thoroughly cleansed out. The boy began to improve at once, and in six weeks his wound was healed and he was able to stand on the limb. In this case there was a history of a traumatism, but it was not altogether satisfactory, so the cause may be said to be unknown.

The last case I shall report is that of baby O'Keefe, aged 16 months, a patient of Dr. Sweetser of Minneapolis, to whom I am indebted for the history.

On July 11, 1898, the child retired in perfect health, but cried the next morning when he put weight on his left leg. He crawled about that day and stood by a chair, but was too lame to walk. On this day he was examined by Dr. Sweetser, who found a normal tem-

perature and pulse, no changed appearance of the hip, but slight flexion and tenderness. He had been walking for three weeks, had always been healthy, partly breast fed and partly on sterilized milk, and had no intestinal trouble, no scurvy and has a good family history. He had measles the February previous, and a history of slight injury a few days before. Rest in bed was prescribed. July 16 he was worse, with some fullness about the hip and obliteration of the gluteal fold; temperature 102 F. July 17 he moved the leg with less pain; temperature 103 F. The next day the temperature was 100 F. The child was kept in bed, with an ice-bag on the hip; there was pain on motion. For the next month he continued about the same, with temperature fluctuating between 101 and 105. Toward the last he was very restless, perspired profusely and lost flesh rapidly.

On August 19, five weeks after the onset of the disease, I first saw the patient, in consultation, and we made a diagnosis of acute suppurative arthritis of the hip, and confirmed the diagnosis by removing pus with an exploring syringe. The pus was sterile under culture and contained no tubercle bacilli. The joint was drained through the anterior incision. The patient began to improve immediately, and on the third day the temperature became normal. In three weeks the wound was healed and the patient perfectly well, with motion in the joint perfect in every direction; the patient creeping, standing, and making efforts to walk; no apparent shortening.

On December 15, five months after the attack and about four after the operation, I examined the child and found motion perfect in every direction, but with about half an inch shortening. While no necrosed bone could be found at the time of operation it is evident that there was either actual destruction of bone or of the growth center. If the shortening increases with the growth of the child, this will be conclusive evidence of the correctness of the latter supposition.

DISCUSSION.

DR. LEWIS SCHOOLER, of Des Moines, Ia.: Mr. President, I am very glad to have heard this paper by Dr. Moore on

a subject which is of interest to all of us, because too many cases of acute arthritis are diagnosed as rheumatism. I presume it is very much the same in all parts of the country, and that too often these cases, when sent to the specialist in surgery, have been diagnosed as rheumatism by the general practitioner, and that some of them have been treated so long for rheumatism that in many instances the joints are irretrievably injured or absolutely destroyed. Sometimes these little patients have been suffering from this suppurative process for such a long time that their lives are almost destroyed; in some instances no doubt they have been. It is quite frequent in this section of the country to find such cases said to be suffering from rheumatism, and the trouble is frequently confined to a single joint. It seems very singular to me that so many physicians should confuse a synovial effusion with a rheumatic affection. It occurs in the knee-joint, the ankle-joint, and the hip-joint; perhaps the hip-joint more frequently than the others is involved, and the next joint, so far as my observation has extended, is the knee-joint, and notwithstanding the fact that all the writers of text-books state that rheumatism is not confined to a single joint, practitioners go on from year to year meeting this class of cases and diagnosing them as rheumatism. In rheumatic affections, it seems to me that there is one symptom alone which would prevent the occurrence of such a mistake, and that is the effusion. In all of those joints coming under the head of the paper just read we find more or less effusion. It is not difficult to determine the amount of effusion in the knee or the elbow joint; in fact, I think they are the most accessible of any others in the determination of the exact condition. When it occus in the hip-joint, of course it is rather remote from the surface, and if the child is well nourished and has a considerable amount of adipose tissue, it is difficult to elicit the symptom sometimes of ordinary suppuration. Fluctuation is hard to discern; in fact, it is frequently impossible. In the knee-joint, when the patella is floating, and when there is loss of contour of the articulation, which is very noticeable, it ought not to require very much skill or observation to determine that it is not a rheumatic affection.

The next in order would be the elbow-joint, and then the ankle-joint. And then again the next most difficult would be the articulation of the shoulder, the end of the humerus with the scapula. Here it is always somewhat difficult, but there is an utter absence of inflammation in any of the other joints, which is not the case with rheumatism. Rheumatism is more likely to attack the smaller joints and a number of joints, and I think is never confined to a single articulation, while synovitis is confined to a single joint in its incipiency. When pus is found, there are a great many persons who believe in following the ordinary expectant treatment after they are reasonably satisfied it is present. There is less tendency on the part of the average general practitioner to open up the knee-joint than there ever has been. More conservative ideas have prevailed in the last few years, speaking of the profession generally, in regard to the treatment of these

affections. Three or four years ago, in discussing this subject before a similar society, several prominent surgeons took an opposite view and stated that they were not in the habit of operating on diseases of the knee-joint; that they did not exactly know why, but they had fallen into the habit of treating these cases without operation; that they had treated them with extension, counter-irritants, and other similar methods, and that they had to open very few joints. I think lately, since the advent of the injection of iodoform emulsion, that a great many surgeons have depended largely upon that method, regarding every case of synovitis, or every case of injury to the articulation, unless the history was clear, as being tubercular in character. Such, however, is not the case. In fact, the majority of cases in which the articulations are affected are non-tubercular. If there is a clear history of traumatism, it is sometimes easy to make out that the affection is not tubercular. But there are a great many cases in which there is an indefinite history of some injury, and the resulting inflammation has come on afterwards and has very naturally been considered as the exciting cause, but that there was a predisposing cause and there were tubercular germs present in the articulation at the time, and it only required a certain amount of traumatism to actively develop the tubercular process. That view has been very prominent in the courts of this state within the last two years, so far as corporations are concerned, not as pertains to children, but to adults. A large number of cases that have come under my observation showed the utter absence of tubercle bacilli, and that there are other causes for inflammatory articulations than those of tuberculosis. I am satisfied that much valuable time is lost in waiting for further developments, as it is termed, or waiting for absorption to take place rather than resort to surgery as we would in a great many other locations. There are a great many surgeons who do not believe in opening the articulations and draining them thoroughly. While they would open an abscess confined to the soft parts, or of the bones, they seem to hesitate between two opinions, as to whether it is best to open and drain the articulation, or to allow nature to take care of it in its own good way, under asepsis and proper hygienic surroundings, which can be obtained in a country home. It is just as essential to evacuate pus in the early stages when found in joints as it is in any other portion of the body, and I think the paper will be of advantage in directing the attention of the members to those cases.

Dr. M. L. Harris, of Chicago, Ill.: I can only commend the paper of Dr. Moore and concur fully with his views of opening the joints in these cases very early and thoroughly cleansing them. The advice is proper and should always be carried out. I desire to direct the attention of the members to one method of disinfecting these joints. It is not long since Dr. Powell called attention to the remarkable fact that alcohol is practically an antidote to carbolic acid. By this he means that alcohol will prevent absolutely the destructive effect of carbolic acid upon the tissues. This has been utilized in disinfecting joints, and I have recently seen the

remarkable clinical effects of disinfecting joints in this way, as carried out by Dr. Phelps in New York. While visiting there recently he took pains to show me a number of cases of joints of the character the doctor mentioned, namely, acute inflammatory and tubercular joints, which he had treated by means of carbolic acid with remarkably good results. I have since seen other excellent results and have adopted the same method. After laying the joint open freely, as recommended by Dr. Moore, it is filled with pure carbolic acid. One would expect it would have a destructive effect upon the tissues of the joint. However, this is not the case. The joints are absolutely filled with pure carbolic acid, which is swept around every nook and corner; it is allowed to remain two minutes, when it is removed, and the joint immediately filled with alcohol. This at once neutralizes the effect of the carbolic acid upon the tissues. The carbolic acid disinfects the joint completely; suppuration ceases almost at once, and the temperature drops to normal. After the alcohol has been applied to the joint a large drainage tube is used, the dressing is not changed for a week, and when it is removed the joint is absolutely clean. You can take pure carbolic acid, wash your hands with it, followed immediately by alcohol, and they will be left smooth and nice. I saw Dr. Phelps wash his hands in 95 per cent. carbolic acid, and then in alcohol, and they were perfectly soft. The carbolic acid did not affect the skin. I therefore recommend this method of disinfecting these joints, namely, thoroughly opening them, filling them with pure carbolic acid, followed immediately by alcohol.

DR. MOORE (closing the discussion): I was very glad to hear the word "conservatism" used, because, since we have gotten rid of scrofula, there is no word made use of by medical men that is so much abused as the word "conservatism." In my paper I advocated true conservatism. The knife is the best conservative agent at the command of the surgeon. Keeping joints encased in plaster of Paris until they rot is not conservatism. It is just the opposite. Surgeons today are alive to that fact. I was very glad to hear Dr. Harris refer to the modern use of carbolic acid in disinfecting joints. I would offer a word of warning, however, to those who have not had experience in the use of 95 per cent. carbolic acid in either disinfecting joints or anything else. Be careful not to dilute the carbolic acid, because while the 95 per cent carbolic acid can be used with impunity, as the doctor has suggested, followed immediately by alcohol, the more dilute solution of the acid cannot be used. Carbolic acid (pure) hardens the tissues, so that there is no absorption, no trouble afterwards, but dilute solutions of the acid are absorbed and are liable to poison the patient. I have no doubt pure carbolic acid will be very helpful in some of these cases, but the truth remains, that before we knew of the use of carbolic acid, as in the cases reported here, after the joints were once opened and thoroughly cleansed, the temperature declined, and the patients were well in a comparatively few days.

A CONTRIBUTION TO THE SURGERY OF THE COMMON BILE-DUCT: REPORT OF A CASE OF CHOLEDOCHENTEROSTOMY.

By JOHN E. SUMMERS, Jr., M. D.,

OMAHA, NEB.

It would be interesting to discuss the progress of the growth of surgery of the common bile-duct following so closely upon that of the more perfect technique of operative work on the gall-bladder and cystic duct. However, the time at my disposal would scarcely admit of more than a mere outline, the details of which can be found in several well-known monographs. I would particularly refer to the writings of Mayo Robson, whose operative experience in the surgery of the gall-bladder and bile-duct is probably as great as that of any other surgeon in the world. With this brief explanatory excuse for not indulging in ancient or modern history, I ask your attention to the subject-title of my paper.

A well-developed young woman, 18 years of age, was referred to me for operation for "gall-stones." The history given was that for the past five years she had been a sufferer from intermittent attacks of hepatic colic. The attacks for the first four years were usually mild, but sometimes quite severe, and were accompanied or followed by some jaundice. The icterus usually cleared up entirely when the intervals between the attacks were of several months' duration. The patient came under my notice the latter part of September, 1899, when she stated that the intermittent character of the pain, pronounced during the first four years of her suffering, had changed much during the past year. She was ever conscious of pain, and would have severe exacerbations with intervals varying from a few days to as many weeks. Jaundice was very pronounced. She had had the regular medicinal treatment for gall-stones. A physical examination showed her to be well nourished, of medium stature, with a rather prominent thick-walled abdomen. Pain was

complained of on pressure on the upper epigastric region, as well as over the usual site of the gall-bladder. The liver was enlarged and could be felt a little more than two fingers' breadth below the right costal arch in the mammary line. The spleen was somewhat enlarged. A diagnosis of stone or stones in the common bile-duct was made and operation advised.

The patient entered the hospital on October 5, and was put on a preparatory treatment, consisting of baths, liquid diet, and the daily administration of effervescing citrate of magnesia (salt), and the effervescing phosphates of soda. The operation was on October 9. The incision recommended by Bevan was employed, and disclosed a most peculiar looking, enlarged liver; it was dark bottle-green in color, with a very irregular, granular surface. The gall-bladder was enlarged to about twice its usual size. The site of the common bile-duct was exposed by depressing the colon downward and outward, lifting up the lower border of the liver and holding the stomach well toward the left. The common bile-duct looked more like a distended portion of the intestine than anything else; its walls were much thickened and tense. The cystic duct was somewhat distended. A stone could not be felt, neither in the cystic duct nor in either end of the common duct. After the usual protective packing with sterile gauze, the common duct was incised, after aspiration, and the index finger introduced. No stone could be detected, neither could I pass a suitable probe through an evident stricture near the duodenal end of the duct. Likewise it was impossible to establish a communication between the common and the cystic ducts through an impermeable occlusion of these, near or at their point of juncture.

I incised and emptied the gall-bladder of a bile-stained mucus, and tried to pass a probe through the cystic duct into the common bile-duct, but failed. The natural anatomic barriers to the passing of a probe through the cystic duct were necessarily, in part at least, obliterated because of the moderate dilatation of this duct. Evidently we had to deal with

a very much dilated common duct which was acting as a reservoir for the bile, because of the occlusion of the route to the gall-bladder. This, however, gave no uneasiness—the strictured end of the common duct near the duodenum was the cause of my anxiety. How best to deal with this puzzled me considerably. The history of the case showed, without question, that this stricture was becoming tighter and tighter. The idea of draining the bile externally through the common bile-duct incision was rejected because I knew prolonged drainage of this kind was followed by a high mortality. I had no confidence in the letting up or giving way of the stricture into the duodenum after the relief of the irritation from the pressure of the bile by external drainage. I was about to attempt a retrograde dilatation of the stricture through an incision into the duodenum, but changed my mind, because, if successful, how could I be assured of its permanency? I had done a like procedure a number of times through the bladder, in dealing with strictures of the deep urethra, but then how different is one's ability to control the after-treatment. The only course open, in my judgment, was an anastomosis of the common bile-duct with the duodenum. This I proceeded to carry out with the aid of a Murphy button—no better technique would have been practicable.

After the introduction of the halves of the button into the duct and intestine, it appeared impossible to bring them together, not so much because of the great tension as because of the difficulty of grasping the half of the button in the duct so as to admit of the necessary manipulation. The procedure became comparatively easy after passing the left index finger into the foramen of Winslow. I then could, with this finger behind and the thumb and middle finger of the same hand in front and opposite one another, control that half of the button. The duodenal half of the button was manipulated by the fingers of the right hand, and the parts brought properly together. The forceps devised by Dr. Murphy, for the purpose of grasping the halves of the button so as to better, in some cases,

admit of a proper approximation, failed to be of service. I know these forceps are valuable aids because I have proven their value a number of times in my work.

The opened gall-bladder was sutured into the wound; it could have been excised, but I disliked to prolong the operation, especially as the patient showed the not uncommon disposition to bleed observed in cholemic patients. I hoped to restore the function of the gall-bladder by attacking the stricture of the cystic duct through my incision into the gall-bladder—the latter, if functionating, is a guard against the re-formation of stones in the ducts, hepatic and common. After irrigation with hot salt water, several strips of sterile gauze and a glass drainage-tube were introduced to the bottom of the field of operation and the wound closed, in part, by suture. I employed drainage because, in my manipulations, after introducing one-half of the button into the duodenum a slight leak occurred from the bowel, notwithstanding the usual precautionary measures—the depth of the operative field from the surface made this slip in technique possible.

Post-Operative History.—The patient reacted nicely from the operation but developed a remittent fever. This was attributed to a septic infection from the rather extensive wound, which repaired by granulation. The infection undoubtedly had its origin in the duodenum. The enlargement of the liver and spleen increased and the outlook for my patient became very unfavorable, although she was up and about the hospital. We were of the opinion that the wound had better be reopened and a search made for the nidus of the infection. A medical colleague, Dr. W. O. Bridges, rather inclined to the opinion that the increased enlargement of the liver and the spleen were not due to the sepsis, but rather to changes already developed because of the long-continued cholemia. The jaundice commenced to disappear soon after the operation, and all of the old pain vanished. I gave my patient Warburg's tincture cum aloes. Within

thirty-six hours after commencing this remedy the temperature dropped to normal and remained so. It had ranged from 99° to 104° F., usually reaching 101° to 102° F. in the evening. A blood examination showed: reds, 2,530,000; white, 10,500; hemoglobin, 40 per cent.; no malaria.

After the temperature was normal, December 1, the appetite became voracious and convalescence progressed rapidly. The button was never recovered; through a misunderstanding, after the end of the second week a laxity of observation was kept. The rapid clearing up of the jaundice and relief from pain proved the patulousness of the anastomosis. The patient returned to her home and will re-enter the hospital after a few months' recuperation, to have the useless gall-bladder excised. No bile has ever discharged from the fistula; only a little mucus comes away. The strictures of the ducts were probably the result of inflammation following pressure irritation from passed gall-stones. So far as I have been able to discover this is the only reported American case of an anastomosis between the common bile-duct and the bowel. Some of our latest text-books on surgery mention that such an operation may be done. I knew this myself, and so stated in a paper on the surgery of the gall-bladder and bile-ducts which I published several years ago. The technique adopted in the manipulation of the halves of the button I believe to be valuable. A thick abdominal wall and an enlarged liver render any surgical work on the common bile-duct exceedingly difficult.

NOTE.—The patient, in a letter from her home, La Grange, Wyo., dated Jan. 24, 1900, says: "When I came home I weighed 115 pounds; now I weigh 126½ pounds. I feel fine, help to do all the work, and have a good appetite."

DISCUSSION.

DR. O. BEVERLY CAMPBELL, of St. Joseph, Mo.: I have not had any experience whatsoever with the surgery of the common duct. I have done a good deal of work upon the gall-bladder, and have had a few cases with stone in the common duct that have not been very satisfactory. I recall

one case, a relative of mine, that was extremely interesting to me, who had had jaundice for two years. The case had been diagnosed as cancer of the liver, but as he would not either die or get well, he saw fit to consult me. An examination of the patient and a history of the case convinced me that he was suffering from gall-stones. He had edema of the feet and ankles, although he was able to walk about. He did not suffer much pain, but was in a very bad general condition, with a slow, weak pulse. I made an incision in the region of the gall-bladder and found the liver of dark color, as mentioned by Dr. Summers in his paper—a mottled, greenish-colored liver, which was greatly enlarged. I found a distended gall-bladder reaching nearly to the umbilicus. I made an opening in the gall-bladder and removed a pint or pint and a half of clear mucus. I also found a single gall-stone as large as a Missouri hickory-nut. Then I made an examination of the cystic duct, and found a stone in it, filling the entire duct. After considerable effort I finally removed it. It was an oblong stone. To our dismay the hemorrhage was considerable; the patient was cholemic, and I was convinced that if we proceeded further he would die. We examined the common duct and found a similar stone in it, filling the entire duct. As the patient was sinking rapidly, pulse almost imperceptible, and hemorrhage was free at that point, we fastened the gall-bladder to the external wound, established good drainage, partially closed the incision, and the patient died four hours later from hemorrhage. A post-mortem examination revealed the stone that we found in the common duct, and we found in the center of the stone a well-preserved piece of grass such as is found in Kansas. This gentleman was from western Kansas, and the history obtained after his death showed that he had been in the habit in walking about his farm of breaking off pieces of grass and putting them in his mouth. There is no question but what he had swallowed a piece of grass, which found its way into the common duct and acted as a nidus for the development of a stone. The stone in the cystic duct was formed in the same way. The large stone no doubt was due to the accumulation of contained bile in the gall-bladder.

I had another peculiar case which I will relate. I expect some of the surgeons who do complete work in these cases will criticise me somewhat. However, after watching a good many operators during the past summer in this country and Europe operate, I have concluded that the best of them, once in a while, encounter extreme conditions in which they are glad to get out any way in order to save the patient if it is possible. A little over a year ago I operated on a patient who had a history of gall-stones. She had had repeated attacks, with a history of having had a severe attack two years previously, during which time the liver was greatly enlarged, temperature very high, and after a very tedious spell of sickness she recovered without surgical intervention. But she kept on having attacks of colic and would occasionally pass a gall-stone, and she applied for relief. We made a very free incision through a thick abdomen, there being probably four inches of fat. When we approached the liver, we found it very much thickened and retracted, turning inwards under

the ribs. It was so much thickened with adhesions that it was impossible, without a great deal of work, to reach the gall-bladder or ducts. When we reached the gall-bladder, we found it very small, adherent, and atrophied to such a degree that we could not tell whether it was the cystic duct or the gall-bladder itself. Finally we concluded that it was an atrophied gall-bladder, which contained four small stones. The liver was so retracted that it was impossible to get a pair of scissors or a knife into the gall-badder. We forced the stones into the cystic duct by pressure, and finally, as we believed, forced them into the common duct, but were not positive as to whether any of them reached the bowel. We closed the wound without drainage; patient did well, but six days later had considerable pain, some jaundice, and passed four gall-stones. I asked one or two gentlemen at a meeting of this society a year ago what they would have done in such a case, and they said they would have removed the gall-stones. My patient recovered, and yesterday morning we operated upon her for double pyosalpinx. We do not know whether she will do so well this time or not. We cut through from four to six inches of a fat belly, removed the pus tubes, and we hope to hear of her recovery shortly.

I am an advocate of complete surgery, but at the same time the welfare of the patient must be considered. The case of Dr. Summers was certainly one in which there was an extreme condition, and the outcome proves conclusively that the doctor did wisely and accomplished a herculean task. Anyone who has had much experience of this kind would certainly appreciate the fact that it is very hard to make an anastomosis here. As I have said before, I have had no practical experience with the common duct except to let it alone. I have only had one case in which there was a gall-stone in the common duct, or, at least, I believed it was there. I have used the Murphy button, and really I think there are cases in which an anastomosis between the gall-bladder and duodenum is the proper procedure. I have had no experience with the new operation of removing the mucous membrane of the gall-bladder, referred to by Dr. Mayo. I think, however, it appeals to our surgical sense as a good procedure, and that further practice will prove that it is warrantable, safe, and a very much better operative measure than fixation of the gall-bladder and trusting to nature to do the rest.

Dr. C. H. Mayo, of Rochester, Minn.: Dr. Summers has reported a timely and unusually interesting case, and it brings to my mind a point with reference to peritoneal drainage. In surgery of the common duct, while the duct is securely fixed, the viscera about it may be in constant motion, and as these patients vomit more or less, it is a question whether the drainage tube will stay where we place it. In our surgical work we have been in the habit of sewing the point where we insert the rubber drain with fine catgut, which dissolves in four or five days, and surrounding the tube with gauze. It forms a channel which we know is going to drain. Vomiting on the part of the patient or the gauze does not displace it, and we are draining the point that we wish to drain.

DR. VAN BUREN KNOTT, of Sioux City, Ia.: Dr. Campbell's remarks remind me forcibly of my own experience with this class of cases during the past month. I have had to operate upon two cases in the last two weeks which had been previously operated one and two years ago; one of them by myself, and the other by a surgeon in a neighboring state. Both cases presented practically the same history and were in about the same condition at this time. Following a cholecystostomy they had experienced temporary relief from pain and other annoying symptoms, and the fistulæ had closed only to reopen later, pain recurred, and there was in one case constant absence of bile from the stools, while in the other bile was present at intervals of several days. Concluding that in the previous operations stones in the common duct had been overlooked, I again operated. The adhesions following the former operations were very numerous and dense and the ducts were exposed with much difficulty. In one case I found a stone tightly impacted in the common duct and had to incise the duct and close with sutures. In the other the stone (also in the common duct) was both movable and soft and was easily crushed between the fingers without opening the duct. The extreme difficulty of these secondary operations as compared with the primary has convinced me that we cannot be too careful that our operative work in this region be thorough and complete, thus rendering unnecessary these secondary operations, for I do not believe that they are made necessary by a recurrence of the trouble, but because the first operation was not completed.

DR. SUMMERS (closing the discussion): I have nothing particular to say in my closing remarks, except to refer briefly to the case of Dr. Campbell, in which he found, as I understood him, impaction in the gall-bladder. In a large number of cases in which I have opened a distended gall-bladder and found muco-pus, or mucus perhaps slightly tinged with bile, invariably there was occlusion of the cystic duct, and the trouble was with this duct and not the common duct. It was either an inflammatory occlusion without the presence of stone, or conjoined with the presence of stone. It has been my observation that a contracted gall-bladder is found in occlusions and inflammatory conditions of the common duct, and not of the cystic duct. When the gall-bladder is distended, except only for a very short time, the cause of the distension will be found in the cystic and not the common duct, in spite of the writings of some text-book authorities.

As to pushing a stone or stones from the cystic duct into the common duct, I believe it is a wise thing to do, provided the stone is small and the manipulation easy. Robson says that in cases where patients are in a bad condition and the stone is in the common duct, if we can push it back through the cystic duct into the gall-bladder, it is wise to do so. If the patient is cholemic and you need drainage, the stone being impacted in the common duct, you can drain and then later perhaps remove the stone or do something towards its solution by injections of olive oil, and one or two other substances, which are supposed to act beneficially. He reports

successful results along this line of practice; therefore it is worthy of consideration.

I was rather mortified in my case because I was not able to produce the button, and while I believe that the button has passed, yet I do not know that it is so. However, the communication between the gall tracts and the duodenum has been established, and thus the purpose of the operation is a success.

THE VAGINAL ROUTE.

By O. BEVERLY CAMPBELL, A. M., M. D.,

ST. JOSEPH, MO.

In choosing between the vaginal and suprapubic routes the one should be selected in each individual case which will offer the greatest advantages for complete work with the least possible danger to the patient; or, where complete work is inadmissible, as in some cases of pelvic abscess, the most favorable route should be selected for incision and drainage. The two routes, the vaginal and suprapubic, are the avenues of approach through which we may attack diseased pelvic organs, and we should be as familiar with the one as the other, if we are desirous of attaining the advantages which will undoubtedly accrue from such knowledge. When either route is selected and adopted as an invariable procedure, to the total exclusion of the other, it is not likely that such an operator will or can appreciate fully the advantages offered from a proper knowledge of the other route. Because an individual operator can, through an inch-and-a-half incision in the abdomen, remove successfully large adherent pus tubes and diseased ovaries, it does not necessarily follow that he has chosen wisely and well as to route or method, as one less dextrous and yet capable might more often fail than succeed in accomplishing the same result. A practical method applied to either route is one which can be successfully practiced by the average operator, and not one which is only successful when practiced by one unusually skilled. Indeed, it is reasonable to conclude that a method that requires unusual skill for its successful accomplishment, when practiced by one thus skilled,

is subjecting the patient to a much greater risk of life, than were a more practical method chosen, where probably less skill is required for its accomplishment.

Conservation of organs and functions must also be considered in selecting a method, or a route through which to operate. The needless sacrifice of organs and functions is to be condemned, and a method practiced through either route which requires such sacrifice is not worthy of consideration. I refer here to the routine method of bisecting the uterus through the vaginal route in cases of pelvic inflammation. I grant that occasionally conditions exist in which it is necessary to sacrifice the uterus, and the vaginal route is probably the best. The method of bisecting the uterus is probably a very good method under such conditions, but when it is advocated as a rational method to be applied to all cases of pelvic inflammation, I denounce it as pernicious.

In defense of the vaginal route in dealing with pelvic inflammation it is claimed that through an anterior or posterior incision the fundus can be delivered, the ovaries and tubes in turn delivered, and radical or conservative work practiced. That such work can be done in many instances is true, but it can be done better, with less risk to the patient, and with more perfect results, in the vast majority of cases of pelvic inflammation, through the suprapubic route. The Trendelenburg position offers superior advantages in dealing with this class of cases, and it is quite generally used in this country and on the continent. The chief objection that has been offered to it is that with the pelvis upon such a recline the drippings from the pelvis are likely to enter the abdomen. I have sought to overcome this objection by the construction of a table which modifies somewhat the Trendelenburg position. The patient is placed in the Trendelenburg position and allowed to remain eight or ten minutes, while the abdomen is given a final treatment preparatory to operation. She is then drawn six inches higher upon the table, the pelvis now resting upon a level plane six inches wide. The intestines will have gravitated while the patient occupied the Trendelenburg

position, and will not be affected by drawing the patient higher, allowing the pelvis to rest upon the level plane. This modified position offers, in my judgment, all the advantages of the Trendelenburg position and a few superior advantages. In the Trendelenburg position the operator works upward under the pubic arch, and, as mentioned, the rupture of a pus tube or an ovarian abscess is more likely to infect the patient by the escape of pus into the peritoneal cavity. In the modified position the operator works downward in the pelvis and the pus is more easily removed and with less danger of its gaining entrance to the peritoneal cavity. It appears to me that the position offers a better opportunity to work, giving more room and admitting more light.

There is a certain class of inflammatory conditions of the pelvis in which the vaginal route undoubtedly offers some superior advantage. In cases of true pelvic abscess, which are extremely rare, incision and drainage through the vagina is all that is necessary to a cure. In cases of pelvic inflammation with pus that can be distinctly palpated through the cul-de-sac, vaginal incision and drainage will often effect a cure. There are occasionally cases of septicemia following labor or abortion, where the entire uterus is septic, in which vaginal hysterectomy will offer the best chances for the patient's recovery. I am not in accord with the commonly accepted dictum, that where it is necessary to remove ovaries and tubes, as the uterus is considered useless, its removal should follow. In the vast majority of cases of pelvic inflammation the uterus, if properly cared for, following a single or double oophorectomy, will be restored to health. The uterus is the key-stone to the arch of the pelvic floor. It tends to support the bladder posteriorly, and equalizes to some degree intra-abdominal pressure by separating the intestines over a wider area of the pelvic floor. Being hung in the pelvis, its interior opening into the vagina, aided by muscular contraction, will drain itself, and it is only occasionally necessary to remove it to facilitate a cure. The additional risk to life by the performance of as formidable an operation as hysterectomy must also be considered.

Where an operation can be performed as safely and as completely through either route, then I should give the vaginal route the preference. The vast majority of women will submit to an operation through the vaginal route with less apprehension than where the incision is to be made in the abdomen. Indeed, very many women will submit to an operation through the vaginal route that would not submit to an operation through the suprapubic route. The occurrence of ventral hernia and abdominal scars deserve consideration only where an equal choice between routes is to be considered; that is, when an operation can be as safely and completely performed through either the suprapubic or vaginal routes.

We will now consider a class of cases which can be safely operated upon through the vaginal route.

Uterine Myofibroma.—Small fibroids of the uterus of the interstitial or subserous variety may be operated upon through the vaginal route. Prof. A. Martin, of Germany, utilizes the vaginal route in all cases of the varieties of tumor mentioned that are of a size that will admit of the uterus and tumors being delivered through an incision in the anterior vaginal wall. Martin's method is to do an anterior colpotomy, dissecting the cellular tissue and bladder from the anterior wall of the uterus. He then delivers the fundus and tumors through the vaginal incision, removing the tumors by myomectomy. Both the interstitial and subserous varieties are treated by this method. The vaginal wound is closed with continued catgut sutures. Vaginal hysterectomy may be performed in any of the varieties of uterine fibroids, where the size of the tumor will warrant such a procedure.

Retrodisplacements of the uterus can be as successfully treated through the vaginal as through the suprapubic route, by the performance of anterior colpotomy and vaginal fixation.

Adeno-cystoma of the ovary of small size can be operated upon and removed equally as well through the vaginal as the suprapubic route; so may all non-inflammatory diseases of the ovaries, such as cystic degeneration and atrophy.

Very many cases of tubal pregnancy—in fact the large majority of cases—may be operated upon through the vaginal route, with equal safety.

We are generally agreed that vaginal hysterectomy offers the very best chances for the relief and cure of our patients in uterine cancer.

The progressive gynecologist of to-day is he who avails himself of the advantages of a thorough knowledge of both the vaginal and suprapubic routes. An operation begun through one route and completed through the other is not an argument against the first, but instead proof of the advantages that accrue from a knowledge of both. There are few gynecologists who will claim to possess diagnostic acumen sufficient to outline pathologic conditions of the female pelvic organs so accurately as to be always able to select, before the exploratory incision is made, the best route or method, but as an experienced general may realize the necessity of changing tactics, so may the surgeon even to the utilization of both routes. There are methods of operating which apply to both the vaginal and suprapubic routes, which, while reasonably successful in the practice of their originators, the reverse is true when practiced by the average operator.

A few days ago I witnessed an experienced operator, through a very small incision in the abdomen, perform a double oophorectomy in a case of chronic salpingitis. The left ovary and tube were delivered through the wound, ligated, and removed. The right ovary and tube were dissected from a bed of adhesions; but it was noticed that the tube had been torn, a part of it left in the pelvis; three days later the patient promptly died. Vision surgery as offered by the Trendelenburg position and the free incision has been severely criticised by the advocates of the small incision. But had it been used in the case mentioned the patient would to-day be alive. How many surgeons have had a similar experience, or have failed through such an incision, in removing a badly adherent tube and ovary situated low in the pelvis. I claim that such a method is impractical, and that its practice is dangerous. So, too, equally dangerous is

the method of attacking badly adherent pus tubes, situated high in the pelvis, through the vaginal route, and if practiced by the average operator will soon be abandoned on account of the fearful mortality ensuing. Methods which are impractical and can only prove successful by frequency of practice and unusual skill should not be given a place in literature, but should be denounced as dangerous teaching.

Within the last month I operated upon a patient in whom I diagnosed a well distended pyosalpinx of the right tube. The uterus was crowded well into the left pelvis. The patient was suffering considerable pain and had a temperature of 103 degrees Fahrenheit. A preliminary curettement was made, when the patient was placed in the modified Trendelenburg position, and a free incision was made in the mesial line. Inspection of the pelvis revealed a greatly lengthened vermiform appendix attached to the right ovary and tube, its adherent end imbedded in a walled-in pocket of pus. The appendix was freed, the pus carefully mopped up, and appendectomy performed. Three inches of the distal end of the appendix and its mesentery were necrotic. The pus pocket in which the end of the appendix was imbedded was composed of the pus tube, a coil of intestine, and organized lymph. The intestine was freed and cleansed, the newly organized tissue curetted from its peritoneal coat. The pus tube was dissected out without rupture and with its ovary were removed. The left ovary and tube were free of adhesions, the tube pervious, and were conserved. Here is a single case where it certainly would not have been good surgery to have bisected the uterus through the vaginal route, as the left ovary and tube did not require removal. To have removed the tube and ovary through an anterior or posterior incision in the vagina would have left a septic appendix to glide upward into the peritoneal cavity, which would have produced septic peritonitis and death.

In multiple abscess cases with the so-called spider web adhesions I consider it impossible, through the vaginal route, to successfully treat such cases. These conditions cannot be accurately diagnosed before op-

eration, and they are quite frequent, as I believe will be confirmed by the testimony of the majority of experienced operators. I am in favor of and am willing to give the preference to the vaginal route in all cases where either route may be selected with equal chances in performing conservative complete work. However, I am yet to be convinced that the vaginal route offers equal advantages with the suprapubic in the majority of cases of pelvic inflammation.

DISCUSSION.

DR. JOSEPH EASTMAN, of Indianapolis, Ind.: I had promised myself not to discuss this paper, but since the president has called on me to do so, I will try and bring up a few points which may be of interest.

In the first place, how is it that a man like Dr. Price, of Philadelphia, has as good success as any of us, and never uses the Trendelenburg position? There are means which we employed before the Trendelenburg position was introduced that are worthy of consideration. If we do not use the Trendelenburg position, the intestines can be kept out of the pelvic cavity and out of our way, and in doing so the first thing to be considered is to have a large number of large pieces of gauze,—not little atoms that may be lost here and there among the floating intestines,—several thicknesses, pushed to the iliac fossa and left to hang down below the intestines to lap over, and if one or two pieces do not force the intestines out of the way, use two or three, or a dozen, until the intestines cannot float down to the region where we are at work. We may have adhesions of the omentum or of the intestines, and as we separate them we force the intestines back out of the way. I say this, not that I oppose the Trendelenburg position, because I use it very frequently. I take a chair similar in form to the one Dr. Campbell speaks of, tip it up by the window, not only for the purpose of getting the Trendelenburg position, but with a view to getting a better light in the abdominal cavity. It is a good idea that the doctor suggests, of lifting the patient higher and allowing the intestines to float away, provided they are fastened by large pieces of gauze, and then lower the patient. Some of us may be compelled to use things other than the Trendelenburg position in dealing with these cases.

I would differ from the doctor in operating on cases of extrauterine pregnancy through the vagina. I am aware that Dr. Kelly and others have advocated it, but we hardly know what we are going after, where we expect to find it, and what we will do with it when we do find it, or how much there will be left, so far as the life of the patient is concerned. In such cases I would operate through the abdomen, and not by the vaginal route. There are certain objections to the vaginal route which must be considered. In an article or paper read by me before the American Medical Association, which met in Washington a number of years

ago, you will see in the transactions some reference to the subject of the vaginal route before it was so highly spoken of in Paris. In the first place, we cannot sterilize the vaginal route as thoroughly as we can the abdominal route, notwithstanding I am in the habit of scrubbing the parts with soap and water, and packing with sterilized bichloride gauze, alcohol, and other means, and yet I am not sure that I have sterilized the parts as completely as I would like to do.

With reference to the facility with which we can operate through the vagina, I have now in over four hundred vaginal hysterectomies always used the Sims' position, not the Sims' position as it is generally understood, but the correct Sims' position where the patient lies on her bosom, with the right limb advanced more than the left, and the coccyx has a plane much higher than the urethra, so that the speculum lifts upwards and does not draw laterally. If we dilate the rectum gently before this, when we draw the Sims' speculum upward, we have a good view of the cul-de-sac, and have free access to anything that may be found. It is much better, in my opinion, than the German or French position with the patient on the back and the pubic bone in your light and way. Here we have all the advantages of the Trendelenburg position; the intestines and greater omentum float out of the way. We have diametrically the opposite of that with the patient on the back.

The doctor mentioned bisection of the uterus, and I think his good sense will compel him to apologize for having mentioned it. Notwithstanding it has been advocated by Frenchmen of great repute and international reputation, I denounce it as the butterfly of surgical fashion, unworthy of the caterpillar from which it emanated. What principles of aseptic surgery can there be in cutting through the uterus, the interior of which we cannot sterilize. Some claim that they can sterilize the uterine cavity, others that they cannot. Others maintain that the uterine cavity is sterile, and that too when they are going after and removing pus tubes that are infected with the gonococcus of Neisser. It is simply casting aside all of our teachings in aseptic and antiseptic surgery. It is unnecessary to split the uterus to remove it skilfully in the position I refer to.

With reference to removing small fibroids through the anterior cul-de-sac, I believe they would have to be small or attached to a small pedicle, or I would think they had better be removed by the abdomen through the posterior cul-de-sac far away from the ureters and bladder. I should consider it to be more safe teaching. The doctor says that those operations that can only be done with skilled hands, done over and over again, are to be condemned. Not always. There are a few operations, like the removal of a cataract from the eye, and in the pelvis, where men become deft in doing them. But there are operations which may be done through the vagina and through the abdomen by the skilled and deft hand of him who is doing only abdominal surgery, which are not to be deprecated, but which are justified as the outgrowth of prolonged experience, and wisdom born of experience.

The doctor has given us an excellent paper. I am sorry that I was called upon to discuss it at all, because I promised myself that I would not.

DR. THOMAS J. MAXWELL, of Keokuk, Ia.: I do not feel that I can say anything of special interest in discussing this paper. I am not a specialist, but a general surgeon. I perform all sorts of operations in gynecology and general surgery. The paper of the essayist is conservative in many respects, and he tried to outline the different routes of operation in the cases in which operations were demanded. He pointed out the cases, as nearly as possible, suitable to the vaginal and abdominal routes.

As to the Trendelenburg position, I cannot agree with my friend Dr. Eastman in condemning it, although he did not wholly condemn it. Personally, I do not think there are objections to it, but many arguments could be advanced in favor of it in the way of getting the intestines out of the way, preventing them from welling up and getting in the way of the operator.

I think the device Dr. Campbell has demonstrated today in the way of a surgical chair, which puts the pelvis on a horizontal plane while the upper part of the abdomen is in an inclined plane, gets rid of many of the objections to which he has called attention. I rather favor, so far as I am personally concerned, the abdominal route, where I can see what I am doing. I have repeatedly attempted to operate through the vagina and have changed my opinion and operated through the abdominal route, because I have found adhesions and conditions that would have compromised the life of the patient; she would have suffered probably death as the result of an attempt on my part to remove the pathologic conditions through the vagina. I do not see that there is as much difference as some operators claim. Dr. Robinson, of Chicago, in his work in the peritoneum, claims that the upper portion of the peritoneum is much more liable to infection on account of the stomata that are developed in the peritoneum at that part through which septic matters are absorbed and taken up; that the pelvic portion of the peritoneum is scantily furnished with these stomata or mouths through which septic matter enters the circulation. He therefore advocates the vaginal route in almost all cases, on account of the lesser liability to sepsis. In a general way, I agree with the paper that has been read.

DR. A. C. BERNAYS, of St. Louis, Mo.: I am somewhat surprised to see that the Trendelenburg position is a matter of discussion. I thought that it had passed that stage, and that the question as to which is the best position for operations in the pelvis can be decided in this way: Is it an advantage to be able to see with the eyes while operating in the pelvic cavity? If it is, can you not much easier see with the eyes when the woman is placed in the Trendelenburg position than when she is lying flat upon a table and the operator works through a small incision, or through a larger one? But most of those who use the horizontal position in abdominal surgery work through a small incision and apparently have their eyes on the ends of the fingers,

reach into each side of the pelvic cavity, pull out the diseased organs, loosen adhesions without the sense of sight, and break up old adhesions, that are not only of the spider-web variety, but stiff cicatricial adhesions. It seems to me that no one who operated before the introduction of the Trendelenburg position, who is well acquainted with the great difficulties we had to encounter in those days, can have any doubt as to which position the operator will choose after becoming familiar with the Trendelenburg position. In that position everything is seen that is done by the ends of the fingers. That argument alone completely settles the question as to the superiority of the Trendelenburg posture. I would not think of performing an operation for pyosalpinx or for pelvic abscess in any other position. Having tried both positions, I have decided that the Trendelenburg position makes the operation much safer and enables the operator to work more quickly and safely. It enables him to control hemorrhage more easily than when the patient is lying flat on her back, with the intestines crowded back by means of broad gauze compresses. Anyone who has tried this method will certainly adhere to the Trendelenburg position and abandon the other.

The table Dr. Campbell has invented and demonstrated seems to be a decided advantage over the Trendelenburg table. I have been thinking about this matter quite a little. Some time last August I met Dr. Campbell in Paris, and he told me about his ideas regarding this table. I can understand very readily that with the pelvis flat, while the back is bent downwards, the intestines will be forced up more completely towards the diaphragm and away from the pelvis than they would be in any other position. It is true, in order to get all of the advantages of this position, the incision will probably have to be made a little longer than in the horizontal position; but it need not be lengthened afterwards towards the umbilicus. It may be carried clear down to the symphysis pubis, and broad retractors can be placed into the incision and the abdominal parieties held away. It is even perfectly proper to cut the conjoined tendon at its insertion to the pubes. That incision would have to be made subperitoneally. We take a tenotome, reach into the subperitoneal connective tissue, and cut the tendon loose from its insertion. This will grow back again. We know how difficult it is to make any kind of tenotomy permanent; even in making a tenotomy of the tendo-Achilles we have the greatest trouble to keep the ends separate; they will grow together in spite of everything, and so will the rectus muscle grow back upon the pubes.

The next point I desire to speak of is with reference to removing what has been called the useless uterus. It is claimed by some that after the ovaries and tubes have been removed the uterus is a useless organ, and, if so, there is no good reason for leaving it. Recently a great deal has appeared in German and French literature regarding this subject, and as it is said that some good things come from Judah, so I would say some good things come from France. There are a set of symptoms which the Germans call Aus-

falls-Erscheinungen, and every man who is practicing gynecology, and has done so for a long time, knows what they mean. They are symptoms which follow extirpation of an organ. I do not know that we have a word in the English language which covers those symptoms. I have not been able to select one. It means those symptoms which are due to the loss or removal from the healthy body of an organ, such as the thyroid gland, the ovaries, or the uterus. Those of us who have practiced operative gynecology for a long time know that women, from whom we have removed the uterus and ovaries, have a certain set of symptoms which sometimes almost drive them to distraction, such as so-called hot flashes, headaches, pain in the breasts, pain in the ears, pain in the toes, etc. In my experience I have found that these symptoms are much more severe in women from whom the uterus, ovaries, and tubes have been removed. I know some of these patients can be benefited very materially by feeding them with extract of ovaries. One of the most remarkable therapeutic effects I have seen in my life was in the case of a woman suffering from hot flashes and pain in the breasts who had lost her generative organs. This woman recovered in a marvelous way after the administration of Armour's ovarian tablets for a few days, and she remained well as long as she took the ovarian tablets. For that reason alone, and for the symptoms which follow loss of the womb and ovaries, and which are less when only the ovaries are removed, we should not always deprive the woman of the uterus, when only oophorectomy and salpingectomy are indicated.

The doctor has expressed very excellently the advantages of the two methods of operating. His conclusions culminated in a sentence that the operator should choose that method which enables him to fulfill the indications, perform the necessary operation which will give the patient the best chances for her immediate recovery; in other words, he simply says that we should practice that method which is the least dangerous. He admits that it is difficult to decide before operation in every case which method will be the best. I must confess, too, that that is the very point that always puzzles me in every case. While I was in Germany and Switzerland last summer I saw a great many operations done per vaginam. There is no doubt that in those countries, and also in France, the vaginal route has taken an enormous precedence numerically over the abdominal route. I saw intramural and subperitoneal fibroids removed through the vagina larger than my fist a number of times by different operators. I saw an ovarian cyst punctured and pulled out through the vagina and ligated through this route. I also saw an operator in Switzerland, a most dextrous man (Roux), who told me that he had abandoned the abdominal route and now performs all of his pelvic operations through the vagina. He is one of the most dextrous manipulators I have had the pleasure of seeing. I saw him remove adherent pus tubes through the vagina in a most dextrous manner. In some cases the adhesions were very dense, so much so that he would have to remove the peritoneal coat from

some of the small intestines that were adherent. He did not stop to sew up the serous coat in those cases, but simply said as long as the mucous coat is intact, tearing of the serous coat made very little difference. He would push the small intestine which had been torn into the pelvis minor, follow it up with a lot of iodoform gauze, which he pushed up against the denuded surface, and into place, where he wanted it to go, and allowed the other end of the gauze to hang out from the vulva. His results were good. I am far from recommending that kind of procedure as suitable for the average surgeon of gynecology. I am merely stating that I saw good results follow this method of operating by Roux. He is likewise a most successful operator for appendicitis, probably the best in Europe at the present time. He advocates operating in every case, and the surgeons who do that in Europe are rare. We are far ahead of them in that respect in this country. But he is one of the few in Europe who advocates operating on every case of appendicitis as soon as the diagnosis is made. His results are excellent, equal to any of those that have been reported in this country.

It is not so much a question of route as it is shall a conservative or a radical operation be done. We can be conservative, or we can do a radical operation by the vaginal route just as well as we can by the abdominal route. I would be willing to endorse the position taken by the essayist in regard to the value of the two routes.

DR. CHARLES H. WALLACE, of St. Joseph, Mo.: I desire to commend the splendid paper of Dr. Campbell, and I was very glad to see him take the conservative view that he did. My impression was, and has been for a year or two, that he was wedded to the vaginal route. I have thought that he was specially adapted to working through that channel, but am pleased to know that he has rather departed from it and is now inclined to the abdominal route. I do not believe it is good surgery to ever attempt to operate on a case of tubal pregnancy through the vagina. Following the advice of Dr. Kelly recently given in sixteen cases of tubal pregnancy successfully treated by the vaginal route, I had a case come under my care of tubal pregnancy with a large hematocele. I opened the cul-de-sac and attempted to treat it, draining through the vagina. There was a large amount of clots. With a sharp pair of scissors I enlarged the opening. I thought I had a good result after subjecting the woman to the necessity of another opening, but it did not seem to do her much good. After every manipulation there would be hemorrhages which would last for several hours. A slow sepsis developed, and the woman went along in this condition for two weeks. During that time the president of the society saw the woman and we discussed the advisability of going in through the abdomen, although it was evident that the woman was going to die on account of the slow sepsis that was going on. However, we opened the abdomen and found a condition of things which offered but little hope of recovery. The fetus escaped into the tube, there being a small slit in the lower part of it where the

oozing was going on, packed the wound carefully and let it alone, after having controlled the bleeding. The patient made a good recovery. After having had this experience in this case, I do not believe in any case of tubal pregnancy it is safe for us to drain through the vagina, but that we should select the abdominal route in dealing with this class of cases.

DR. CAMPBELL (closing the discussion): I feel grateful for the liberal discussion which my paper has received, and I have very little to say in closing. I desire, however, to refer to a few points brought out in the discussion. In the first place, Dr. Eastman told us about the methods of operating before we made use of the Trendelenburg position, and said that we could place the patient in a level position and by means of large pieces of gauze keep the intestines back out of the way of the operative field. In some instances that can be done undoubtedly through a thin abdomen, but the incision in such cases must be very large, and, furthermore, the intestines will tend to get back all the time into the lower portion of the abdomen. In fact, the majority of operators who operated before the introduction of the Trendelenburg position allowed not only the intestines to get down in the vast majority of cases, but to come out through the opening of the abdomen and appear upon the parietes. There are plenty of operators at the present day who will agree that I am telling the truth when I say that the operator was very fortunate indeed if he kept the intestines back with the patient in the position Dr. Eastman described, to say nothing of keeping them in the upper portion of the abdomen. In my opinion, it is utterly impossible with large pieces of gauze to keep the intestines away from the operative field. When a woman is placed in the prone position and the abdomen is opened, the bowels will glide upward. The manipulations you subject the intestines to in your efforts to hold them back with large pieces of gauze may cause more or less injury.

The position I took, that extrauterine pregnancy or tubal gestation can be treated successfully through the vagina, I repeat. I will say that the method of my friend Dr. Wallace is not the one I would use. The first principle in treating a case of tubal gestation is to stop the hemorrhage, and the next principle is to get rid of the tube in the majority of instances, doing an anterior colpotomy if thought necessary. Any man who is familiar with the vaginal route, who has done considerable surgical work through this route, can do an anterior colpotomy, making an incision into the anterior vaginal wall, dissecting, as in a vaginal hysterectomy. the mucous membrane of the bladder off of the anterior vaginal wall. With two pairs of tenaculum forceps, delivering the fundus through the vagina, you can operate just as successfully in cases of tubal gestation up to the third month through the vaginal route as you can through the abdominal and as quickly, and the patient will have an equal, if not a better, chance of recovery. To simply operate through the vagina and drain are not enough. We must do complete work in cases of tubal gestation. I saw Prof. A.

Martin do eight operations of this kind, every one of which was successful, and the patients were able to be up in two weeks. I was there long enough to see every one of them get out of bed. If I had not done it myself and knew it could be done, I would not make the bold assertions that I do. While I am not a stickler for the vaginal route, yet this class of work can be done just as successfully through the vaginal as through the suprapubic route up to the end of the third month.

With reference to bisection of the uterus, I do not think Dr. Eastman understood me exactly. I condemned the method, but said that possibly there might be a place for it in cases of septicemia following labor or abortion pretty well advanced in which the uterus was profoundly septic and there was general septicemia. I mentioned one case in which I did not do a hysterectomy, and the patient died. I did not operate at all. This is the only case I have seen in my own individual practice in which I thought it was necessary in a case of pelvic septicemia from abortion to sacrifice the uterus. Men of more extensive experience have seen these cases, and vaginal hysterectomy will offer the best chance for recovery. I do not think the principle will hold good where we have septic uteri to deal with. In an infected patient it does not matter very much whether you bisect the uterus or not. If the septic focus is confined to the broad ligament or to certain lymphatics, you can get at and treat the majority of such cases with more or less success.

With reference to fibroid tumors of the uterus, if they are of a certain size, you can remove them as successfully through the vagina as through the suprapubic route. Myomectomy is applicable to cases of the subserous variety, and I have seen operations of this kind done in Europe that were eminently satisfactory. At the end of two weeks the patients were up and about and made uninterrupted recoveries. I have seen the uterus turned down and tumors to the number of five or more removed through an anterior incision as large as a hen's egg, some of them, and others not quite so large. I have seen them removed by myomectomy, the incision closed by a continuous catgut suture, and I have seen the uterus split between the two cornua and a submucous fibroid as large as a walnut removed from its interior, the uterus sewed up, no hemorrhage following, and patient made an uninterrupted recovery. But you must know how to do this work. The progressive gynecologist must be as familiar with one route as he is with the other if he wishes to be successful.

With reference to the point of small incisions, I do not believe that the average operator of to-day has skill sufficient to go down through a small incision, let the intestines take care of themselves, and dissect away a fragile pus tube adherent to the omentum and intestines, and maybe the appendix adherent to it, and remove it successfully. The truth is this: There is too great a mortality attending these pus cases to attempt to do thorough work through a small incision.

The table I have brought before you to-day for exhibition

and consideration originated from a lack of success which I saw in Europe in the hands of the best operators in pelvic surgery. When I saw that such operators as Olshausen and Martin had a fearful mortality following operations in these cases, I thought the Trendelenburg position ought to be modified. I have noticed in cases of pus tubes and pelvic abscesses that infection took place, notwithstanding these men worked carefully and quickly, from the entrance of pus into the abdominal cavity, infection following as a consequence and a large percentage of the patients dying. Any of us would be willing to accept an improvement in technique which will enable us to treat successfully pus cases. There are operators here to-day who have had their trials and tribulations when they got into an inflamed pelvis. I do not believe that any operator can tell exactly beforehand what he is going to encounter. I am sure that he cannot do so. We often find adhesions that we do not expect; we find pus in cases where we sometimes think it is not present. If we do not make a free incision and have ocular inspection of the parts, we are going to infect the patient.

NOTES ON THE X-RAY: ITS USEFULNESS AND MISTAKES.

By J. RUDIS-JICINSKY, A. M., M. D.,

CEDAR RAPIDS, IA.

There seems to be a plethora of new institutions which go before the public under the "scientific cloak" and which seek to uphold their interests in this way. Months ago there was in a certain town a quack, who advertised himself with a complete X-ray apparatus, pretending, with the help of his second-hand machine, to diagnose and certainly heal all acute and chronic diseases. What a shame! The cause of real science is not a selfish one. It extends the hand of welcome to all new-comers who can and dare to point to a clean bill of truth and proof of the claim that they make. It, however, cannot tolerate any exaggeration which has plans wholly at variance with common sense and legitimate effort. This the public should know especially in regard to the unique discovery of Professor Roentgen, which to the world of science gave new problems and new means of diagnosis to our profession.*

The question of the value of the X-ray in diagnosis

---

* The American X-Ray Journal, February, 1899. By the author.

in bone-surgery seems to to be settled; it is beyond the experimental stage and has come to stay. In medicine and as a therapeutic agent the results are to be determined, and the best way to reach its full value in this direction has to be found by further experimentation. I desire to take this opportunity to urge the more general use of X-ray examinations by our profession and to repeat the warning again and again, that this branch should and must remain in our hands only, because there is a necessity of great deal of refinement in operating the X-ray and its pictures, experience in examining, ability to read correctly the varying shadows, as well as a good deal of knowledge in anatomy, pathology, and physic. There are so many new "things," proprietary and otherwise, added to the list of the surgeon of to-day that the individual can scarcely keep posted on all of them, but he will with great avidity appropriate those facts which can be instantly transformed into working force, and will always appreciate the demand for the practical, the utilizable, especially in a case of early and proper diagnosis.

Pushing aside the theoretical discussion, and gain from which is conspicuously apparent, it is perhaps well to review the results of actual experimentation illustrated by some radiographs. In the last three years I made quite a few exposures and had not a single burn. For such work the first requisite is an exciting apparatus with a good interrupter, the knowledge of the power of our X-ray, the distance of the tube from our object, the distance from the plate, the duration of exposure, and the angle at which the picture is taken.* If we wish to make correct diagnosis and produce an accurate picture, we must never be satisfied with one radiograph of the case, but make it also our duty to compare the picture of the injured part with the normal one. Work as rapidly as possible, make short exposures, and protect your patient. Keep the obliqueness of the X-ray in mind, make the

*I have efficient tubes; good oil-insulated induction coil, capable of delivering 12-inch spark. Interrupter giving about 30 to 34 breaks per second. (Wehnelts, Caldwell, etc.)

radiograph as nearly life size as possible, to get sharply defined outlines, remembering that we are dealing with shadows only, and use a proper dividing screen (Dennison's, etc.) for measurements and exactness of your pictures.*

As to the usefulness of the X-ray, we know that it detects and diagnosticates fractures and dislocations. It shows correctly the position of the fragments of the broken bone before reduction and after, or whether it is a fracture or a dislocation, or both together. We may then observe through the dressing the growths of the callus or photograph through a plaster-of-Paris over case, after an attempt at reduction, and see if proper approximation of the fragments had been accomplished and find, perhaps, sometimes that the union did not and could not take place. With the help of the X-ray we may follow the development of the bones and discover all deformities and diseases; as, for instance, tuberculosis, necrosis; various bone changes, as periostitis and osteo-sclerosis and osteoporosis. (Hahn, Hamburg, 1899.) We know now that fracture of the styloid occurs in four out of five cases examined for Colles' fracture and the treatment, therefore, is nowadays altogether different. (Thomas, Beck, etc.) In a vicious union—or when the nail is used—we may observe the progress made, see the marrow cavity and the nail perfectly, and transplanted bones just as well. Any deviation of vertebræ, and in coxalgia, especially beginning, the osteitic area will show well.† Examinations of infants and children may be made more easily than in adults. It is not necessary to remove the clothing. In anchylosis the X-ray is useful also; gout and rheuma are distinguished from each other, and in acromegaly the progress of the disease and improvement may be watched. For the obstetrician and gynecologist we have as yet nothing more than a better

---

* New York Medical Journal, December 2, 1899. By the author.

† Coxalgia show the following lesions: Atrophy of the femur and of the pelvis on the side corresponding to the coxalgia; light color of the whole femur, indicating lesions of the full length of the bone; deep color indicating fungi or the presence of cold abscess; spongy bone with small anfractuous cavities; lesions of the cotyloid cavity; dislocation or partial dislocation of the head of the femur. (Barbour, London, 1899.)

diagnosis of a large or small pelvis, or any other deformity of the same. There is one case of extra-uterine pregnancy on record which was recognized by the Roentgen light. The same has inestimable value, not only in military surgery,* but may be considered very promising in detection of fractures of the skull, hematoma, bony growths, tertiary gummy tumors, hydrocephalus and foreign objects in the head, the eye,† ear, and other parts of the body.

Not long ago Julliard in Geneva applied the X-rays and found a vesical calculus. Renal calculi of mineral constituents and gall-stones containing excessive lime and less chlolesterine may be seen, but not always. Same with encapsulated trichina. In the study of anatomy you may follow the injected arteries on a cadaver and observe arterio-sclerosis in a living subject. Aneurism of thoracic aorta, enlargement of pulmonary artery; rhythmic dilatation of the heart, transposed heart, mobility and action of this organ are recognized by the X-ray. Central pneumonia, emphysema, early pulmonary tuberculosis, acute miliary tuberculosis, fluid in the chest, as in pleurisy or empyema, pneumopyothorax, abscess, calcification of the pleura, adhesions, etc., are also diagnosticated early, when there are no physical signs, or these are confirmed.‡ In the throat we may easily recognize the larynx, trachea, cartilages, and the hyoid bone and sometimes tumors of esophagus. The chest and the abdomen are better examined with the screen, and you may outline the spleen, liver, and kidneys. Position and size of the stomach can be made out and its peristalsis followed during the digestion. If the patient takes few eggs with a drink or subnitrate of bismuth, or if the stomach and large intestine be distended with some gas, they show in white areas on the screen, giving the outline of the respective organs. If you let your patient swallow a capsule, made for this purpose, any intestinal obstruction will be read-

*Senn, The Journal A. M. A., November 18, 1898.

†Wound in the Eye by a Grain of Lead. Burgeons, in Un med. du Nord-Est., Reims. The Chicago Clinic, etc., No. 4, 1899. Localization of Foreign Bodies in the Eye and Orbit by X-Rays. Archives d'electr. med., Bourdeaux.

‡New York Medical Journal, February 18, 1898. By the author.

ily diagnosed. As a therapeutic agent the X-ray is used in lupus, eczema, favus, psoriasis, acne, etc.

Now as to the fallacies of the X-ray pictures or so-called mistakes. These can be sometimes easily avoided if we keep in our mind the source of the X-ray and all the steps necessary in the photography of the invisible. If you take two common photographs made by different photographers and of the same subject they will not be exactly the same. With radiographs it cannot be otherwise. We know that the X-rays are projected in all directions from that side of the reflector opposite to the cathode. Now in this beautiful green field of X-ray activity we have to work, using our fluoroscope as often as we can, and determine the shadows of an object opaque to the X-ray. The localization has to be done by triangulation, just as well as with other shadows, with the help of a dividing screen or with a double-focus tube.* But the picture may be yet deceptive, on account of the gelatine of the plate or the celluloid film. Mere scratch may be supposed for foreign body, dark shadow for a diseased part. We have to be careful in the interpretation of the X-ray negatives, which are usually full of detail, entirely lost in print. Sometimes objects back of the plate may appear upon the same which might be due to the deflection of rays of very long wave lengths, or to the X-rays emitted by bodies in the field of the discharge apparatus, such as the air.† Distortion may be produced also by position and then the diagnosis will sure to misguide. We have to remember that we are dealing with shadows only, which may be shifted by slightest rotation. Therefore, fractures and dislocations may be made to appear exaggerated, especially when the operator is ignorant of the X-ray technique and has forgotten all about his anatomy, pathology, and principles of divergence.

If we put, for instance, a flat disk of lead over the second palmar interosseus and adductor pollicis, between the metacarpal bones of the left hand, and

---

*Charles Lester Leonard, Philadelphia. American X-Ray Journal.

†Further Observations on the Properties of the X-Rays. By W. C. Roentgen.

make a radiograph of this condition, the picture may be easily exaggerated and the shadow of that piece of flat lead taken for bullet, imbedded deep in the palm. But the expert who knows "how to read the shadows," and trusting to no appearances, will find out himself and make correct diagnosis with the help of his fluorometer, which not only marks the picture, but provides an accurate cross section of the body and supplies an absolutely correct right angle, at the intersection of the lines of which the foreign object must be found, if it is there; if not, and the case was masked only, the fluorometer will give us the best evidence of any deviation,—an evidence which may be proven and admitted in any court, for its impartiality, exactness, and truth. Without such a stamp of proof the radiographs as a legal evidence would be worthless.

DISCUSSION.

DR. M. L. HARRIS, of Chicago, Ill.: I have had considerable experience with the use of the X-ray, and while I fully appreciate its scientific value, and would encourage its development to the fullest extent possible, in the hope that something may eventually come of it which will be of practical use to us, I must say that at the present time the X-ray is not of much practical use either to the physician or t surgeon. In a few cases of fracture the X-ray will give us information which we are unable to obtain by any other method, but I claim that it is only in a very small proportion of the cases. In a large majority of the cases of fracture we are able to determine by physical examination the exact condition of affairs just as readily as we are by means of the X-ray, the only difference being that the X-ray makes it apparent to the eye instead of to the sense of touch, as it always has been heretofore. The X-ray is capable of leading us into error. For instance, I had one case in which two radiographs were taken by an expert who has made the X-ray a study, and who has probably done as much, if not more, work than any man in this country in this regard, and both pictures showed absolutely no fracture, when a fracture was distinctly present and could be easily detected by the touch and examination.

Another point in regard to ununited fracture which Dr. Bernays mentioned and said the X-ray would always afford us means of detecting. I recall a case of ununited fracture of the forearm which was submitted to the X-ray, and everyone who looked at the picture said that union had taken place. An examination of the forearm would convince anyone at once that no union had occurred. I have seen many other examples where the X-ray led to erroneous conclusions, so I say it may be a source of great error to us, and

if you take a radiograph and submit it to any number of experienced surgeons, for instance, there will be a divergence of opinion as to the condition present, showing that no one is able to accept the X-ray as conclusive evidence in all cases. Of course, in a case of marked deviation in a fracture of a long bone, that anyone could detect by putting the hand on the limb, all would agree. Stimson, of New York, in his preface says that the X-ray thus far has been of little practical use to the surgeon in the diagnosis of fractures, meaning that it had furnished little information not already known.

I would object emphatically to the use of the X-ray in medico-legal cases. At present the X-ray should not be admitted in court in a medico-legal case to come before a jury. If surgeons who are experts in the use of the X-ray are unable to uniformly and accurately determine the meaning of the X-ray, of what use is it when presented to an ignorant jury? It can result in nothing but harm. While I appreciate, as I have said before, the scientific value of the X-ray, and would encourage its use, I do think that we ought to be very guarded in expressing positive opinions, as its use so far has been purely experimental.

Another point I want to make is on the use of the X-ray to determine the accurate approximation of the fragments. A number of instances have arisen where fractures have been reduced by competent surgeons, and so far as external examinations were able to determine, the fragments were in good position, but the X-ray showed some deviation from the normal line, and this has led to numerous and useless repeated attempts to readjust the fragments. These cases have been reported and the skiagraphs exhibited. A very interesting case recently occurred in Chicago, in which a fracture of the forearm existed, and the father, who was overzealous in regard to the treatment of the case, sent his son, after the fragments had been adjusted by a competent surgeon, to the X-ray laboratory, and the X-ray showed that apposition was not perfect. He therefore hastened to another surgeon, who removed the dressings and readjusted the fragments. The patient again hastened to have an X-ray picture taken, with the same result. This procedure was repeated until several surgeons had readjusted the fragments in this case one after the other. The point is, that even when the X-ray shows the bones are not in accurate apposition, the functional results and the lines, after union has taken place, may be found to be perfect. Such evidence of the X-ray, if presented in a court, might result in great harm to the surgeon, when the functional result has been absolutely perfect, so far as the patient is concerned.

DR. C. H. MAYO, of Rochester, Minn.: It seems to me that the trouble is this, that everyone who has an X-ray apparatus thinks he is an expert. I agree with Dr. Harris in the main concerning the use of the X-ray in fractures. I also agree with him as to the medico-legal points brought out by his last remark. Undoubtedly there is a field for the proper use of the X-ray, particularly in locating foreign bodies. I have had a good deal of work and experience in removing foreign bodies from the esophagus and trachea that were located by

means of the X-ray. Some of these foreign bodies had passed through the esophagus into the stomach and intestines, such as long pins with glass heads, etc. I recall two or three cases. One was a child brought to me six days after it was known to have swallowed a buckle. The buckle was open. By means of a metallic probe I located the point of impaction of the buckle two inches below the upper border of the sternum, and the question arose as to which way the buckle was open. By means of the X-ray I found the buckle pointing upwards to one side with its teeth impacted in the mucous membrane. I made an external esophagotomy, and with a curved probe caught the loop of the buckle, rotated it and withdrew it. In this case the X-ray was unquestionably of great value.

Another child swallowed a tack with brass head, with long point. The question was how to locate it and remove it. In this case we removed the foreign body by means of a low tracheotomy. There are many cases of this sort in which the X-ray proves of great value to us.

In hunting for bullets, needles, pins, pieces of glass which persons have stepped upon in early life and have been located in the foot, we all know that these objects move. If we take an X-ray view of a needle in the arm or in the thumb, and at the end of two weeks take another picture of the same object, we find that it moves one or two inches. If one is going to operate on such a case for the removal of the foreign body, it is a good thing for him to do so as soon after the picture is taken as possible. I recall operating on a case in which a bullet was imbedded in the thigh and was supposed to have become encysted, although hemorrhage had taken place under the quadriceps. This bullet had a play of nearly four inches in two months.

With reference to burns following the use of the X-ray, a case came up in Rochester, Minn., last week where the X-ray burn was produced a year and a half ago. The case was one in which there were symptoms of stone in the kidney, and two X-ray pictures were taken, and after the last view had been taken a severe burn resulted, which did not heal for nearly a year. Suit was brought against the operator of the X-ray apparatus and was dismissed at the last term of court, as it was evident that the lawyer had brought it for the purpose of black-mailing. Unless there is abundant evidence in these cases, the suits are usually dropped. There have been a good many suits instituted in different parts of the country against surgeons on account of burns following the use of the X-ray, and the question arises whether there is any difference in the apparatuses, and if one apparatus will produce fewer burns than another. I looked up the matter of putting in a static battery in our office not long since, and in talking with Dr. Greene, of Truax, Greene & Co., of Chicago, he told me that there were one or two recent cases in Chicago in which burns had been produced by the X-ray, and that taking pictures with the X-ray would produce burns in certain subjects. I have seen two burns following the use of the X-ray; one in the case of a little child who had put a needle in its mouth and swallowed it. A doctor told me who had seen the case that it could be grasped in the center of the throat; that both ends were imbedded so that it

could not be slipped up or down. I examined the child's throat and found that the needle appeared to be in the side of the wall of the pharynx. I had an X-ray picture taken, but it did not show any needle. It seemed if I could feel it. I had two other pictures taken the next night which did not show the needle. I slipped my finger over the other side of the throat and felt it in the process along the hyoid bone and removed it.

DR. A. C. BERNAYS, of St. Louis, Mo.: I was very much surprised at the position taken by Dr. Harris about the usefulness of the X-ray in fractures, and I rise principally to give expression to exactly the opposite view. I think the X-ray in the diagnosis of fractures is extremely valuable. Of course, the X-ray is not as reliable in diagnosis of fractures perhaps as it is in locating foreign bodies. The usefulness of the X-rays in locating foreign bodies I could substantiate by giving reports of dozens of cases, if necessary. In fractures, Dr. Harris made the statement that the X-ray failed to show a fracture where it could be detected by cruder methods. I was going to ask him to explain how such a thing is possible. If there is a fissure fracture, even with close approximation, the X-ray radiographs, properly made, will always show the fissure. I must add, however, that the examples I have seen this morning are not the best I have ever seen. They are far from it. I want to say, that I would absolutely refuse to testify as an expert in any case of fracture or injury to a bone unless I was armed with X-ray pictures or radiographs of the injured or fractured limb taken so as to show two views exactly at right angles with each other.

DR. GEORGE R. SKINNER, of Cedar Rapids, Ia.: I have had quite a little experience with the X-ray, and have used the Tesla coil. Some four or five months after the discovery of the X-ray, when no one seemed to know about it producing burns, a gentleman came to my office whom I had treated for appendicitis and insisted that an X-ray view be taken of his side. I was interested in the X-ray and took two skiagraphs. The exposure, made by means of a small tube, was fifteen minutes the first time, and about eighteen minutes the following day. My son was operating the machine, and he concluded to take pictures of himself. He took several for two or three days in succession, and told me that a few days afterward he looked as though he had been sunburnt. A little later we received a letter from the young man who had been exposed to the influence of the X-ray stating that the part of the body which had been exposed looked as if it had been sunburnt. It was sore, and was blistered. This sore lasted eighteen months, then healed. My son was laid up about six months with his burns. At about this time a case of burn following the use of the X-ray was reported in a journal. Since then we have had tubes made which would give greater intensity to the ray and have guarded against this accident. We have not had any sores, or any inflammation, although we have taken a great many skiagraphs.

In reference to the apparatus employed, I use a Tesla coil which is excited by a current of considerable voltage, from fifty to one hundred volts, although that coil is immobile. If the tube is excited with a static machine, it is also immo-

bile. My impression is that the most valuable apparatus for the surgeon to use is something in the shape of a coil which can be excited by a dry-cell battery. But there is one thing to be remembered, no matter how expert the surgeon may be in using the X-ray machine, and it is this: He has got to have some form of screen in order to locate foreign bodies in the soft tissues accurately, or he will have a great deal of trouble when he operates to remove them.

I agree with Dr. Mayo as to the value of the X-ray in locating foreign bodies. In such cases it is extremely useful. But to be of value to the surgeon in fractures, in locating foreign bodies, and injuries, the apparatus should be portable, so that it can be carried from house to house, as many patients cannot be taken to the office of the surgeon.

DR. M. L. HARRIS, of Chicago, Ill.: I do not wish to be understood as saying that the X-ray will not detect fractures as a general thing; of course the X-ray will do this in almost all cases, but I said that it did not give any information which we could not obtain otherwise. In the case I mentioned there were two views taken of the fracture. The fracture was very easy to diagnose by touch, and crepitus was very apparent, and yet the X-ray absolutely failed to show the slightest sign of it, although the machine was operated by an expert. As to the value of the X-ray in locating foreign bodies, there is no question, and I agree with what Dr. Mayo has said in that connection.

DR. JICINSKY (closing the discussion): I am of the same opinion as those who have discussed my paper, that radiographs should not be accepted as legal evidence unless there is abundant testimony to show that they are correct.

As to the value of the X-ray in fractures, if we use the fluorometer we can see the separated fragments much better and easier than we can by determining the existence of a fracture by the sense of finger touch. With reference to the presence of foreign bodies and their detection by the aid of the X-ray, they are readily seen and easily located, without any deviation, by using the fluorometer, but not otherwise. I would not accept any skiagraph as affording reliable evidence without the use of the fluorometer.

In regard to burns, if the exposure is not too long, there is no danger of a necrobiosis or dermatitis following the use of the X-ray. Anyone who is accustomed to using the X-ray apparatus can make a very good radiograph of the hand in five seconds, and one of the knee joint in ten seconds. I always protect the patient. I cover the parts which are not to be exposed with stanniol, and those exposed directly to the X-ray oiled (olive oil), in order to prevent a burn from taking place thereafter.

THE LONGITUDINAL WIRE SUTURE IN THE RADICAL OPERATION FOR HERNIA.

By M. L. HARRIS, M. D.,
CHICAGO, ILL.,
PROFESSOR OF SURGERY, CHICAGO POLICLINIC.

Hernia is one of the most frequent complaints with which humanity is afflicted, as about one individual in ten is handicapped by some variety of this affection. In early times permanent relief from the condition was scarcely thought of, and the sufferers were compelled to be content with the palliation found in the annoyances and inconveniences of trusses, bandages, pads, etc. In the advancement of modern surgery, however, this field has not been neglected, and it may now be truthfully said that the large majority of cases of hernia may find permanent relief in operation with a minimum amount of risk. It is but a short time since surgeons were attempting to define the indications for submitting a hernia to the radical operation, but now the results are so uniformly successful that the mere presence of a hernia must be looked upon as prima facie evidence of the need of an operation, and we look now not for the indications for the operation but for the contraindications, or reasons why an operation should not be performed. Many factors have contributed to the success of the modern operation for hernia. It is not the intention to enter into history, but simply to describe and illustrate an operation for the radical cure of inguinal hernia by means of the longitudinal wire suture "en etage."

The points which we will consider in this operation are: (1) The incision; (2) the sac; (3) the cord; (4) restoration of abdominal wall.

The straight incision is considered the best, notwithstanding the fact that some writers have recently recommended a curved one. The advantages claimed for the curved incision are that the incision is made farther away from the genital region, a region difficult to disinfect and thus less liable to become in-

fected, and that the scar does not involve the spot where a truss would press should it become necessary to wear one. The first of these advantages does not obtain for the reason that the lower or inner end of the curved incision, the one supposed to be more liable to infection, approaches just as near or even nearer to the alleged undesirable region as does that of a properly placed straight incision. In regard to the second claim, a truss should not be worn after an operation unless there should be a recurrence, but recurrences are so very rare and the cicatrix following the use of the wire suture is so insignificant that this claim has no force. The straight incision, therefore, is preferable. It should parallel Poupart's ligament but lie three to four centimeters above it. It should begin opposite the external limit of the internal ring and terminate short of the spine of the pubis. Such an incision will vary in length from six to twelve centimeters according to the size of the individual, and this length is sufficient for any sized hernia as the tissues are very loose in this region and easily drawn in any direction.

In regard to the sac all operators are practically agreed that it should be removed. It should be separated from the cord carefully so as not to lacerate the spermatic veins which are often spread out over, and quite intimately attached to, the sac. It should be freed about the neck well up into the abdominal cavity. Before transfixing or ligating the neck, the sac should invariably be opened and one should demonstrate by inspection and palpation the absence of adhesions of the omentum or intestine to the inner wall of the sac. When drawing out the sac preparatory to ligating the neck, the possibility of the bladder appearing at the inner side should never be forgotten. Nothing but the sac wall should be included in the ligature. When the neck of the sac is large the puckering resulting from its ligation may be obviated by compressing the neck from above downward and suturing through and through. After the neck has been properly closed the sac is cut off and the stump allowed to retract into the abdomen.

Some diversity of opinion exists as to the proper disposition of the cord. It has been reduced in size by having some of its structures removed. It has been displaced or transplanted in all directions, upwards, downwards, outwards, and inwards. Even the bone has been notched and grooved to permit its passage. These attempts to apparently get rid of the cord by transplantation are like the ostrich hiding its head in the sand,—the cord still remains. It is a delusion to suppose the hernia is due to the fact that the cord passes through the abdominal wall. The hernia exists because there is a defect in the abdominal wall, and these two statements are not synonymous, as the absence of hernia in the large majority of individuals constantly demonstrates. If sufficient proper tissue can be obtained to securely repair the defect in the wall, a recurrence is highly improbable; but if such tissue cannot be obtained, or proper repair be not made, then a recurrence may be looked for regardless of where or how the cord be transplanted. Should the cord be excessively large or contain numerous dilated or varicose veins, its reduction in size by the removal of superfluous tissue and veins after Halstead is certainly desirable, but great care is necessary in removing veins lest atrophy of the testicle follow. It should then be restored to its normal oblique position, for an oblique perforation leaves mechanically the firmest wall. We now come to the most important part of the operation, namely, the closure of the defect in the abdominal wall. This defect consists essentially in an internal opening much too large for the transmission of the cord. This internal opening is the space bounded by the arch of the internal oblique and transversalis muscles with their conjoined tendon and the inner edge of Poupart's ligament. The size of this opening depends upon the extent to which the two above mentioned muscles take origin from Poupart's ligament and the width of the conjoined tendon. When these muscles are well developed, with a broad origin and tendon of insertion, the opening is small; when the contrary exists the opening is large. When a hernia is once started it may greatly enlarge the

opening by the constant pressure which it exerts, producing atrophy and displacement of the edge of the muscles as well as of the tendon.

The principal part of the operation consists in the closure of this opening to a size only sufficient to permit the exit of the cord. This is done by approximating the free edge of the conjoined tendon and the muscles to the inner edge of Poupart's ligament by means of sutures. Fortunately the muscles and tendon are

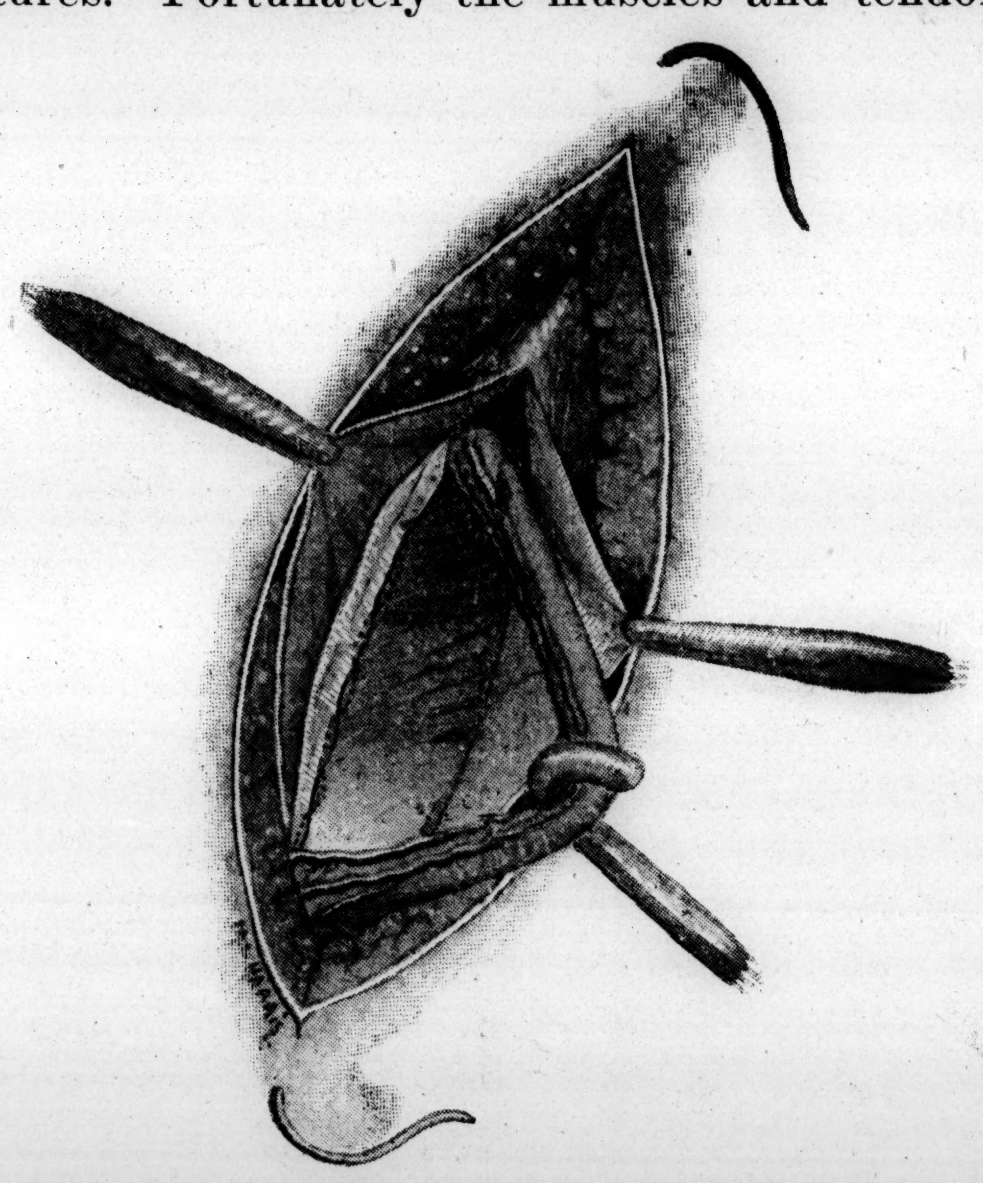


FIG. 1—Showing the coaptation of the muscles and tendon to the inner edge of Poupart's ligament by the introduction of the first wire.

usually sufficiently well developed to form good firm tissue for closing this defect. The approximation should be made from within outwards, the cord being crowded outwards to the angle formed by the divergence of the origin of the muscles from Poupart's ligament.

The union between the approximate edges should be as firm as possible. To this end the loose connective tissue covering the ligament and lying between this structure and the edge of the arch should be re-

moved in order that the approximate edges may lie in immediate contact. To maintain this intimate contact, I have introduced the longitudinal wire suture, which possesses many distinct advantages. This suture is introduced in the following manner: No. 22 or 23 silver wire is threaded directly to a curved, round, non-cutting needle. This enters the skin about 1 to 2 cms. from the inner angle of the incision and passes obliquely down to the inner edge of Poupart's ligament. The needle takes a grasp of this structure not to exceed 1 cm. in length in a longitudinal direction, but so as to cross some of its fibres.

A similar grasp is now taken of the conjoined tendon, then of the inner edge of Poupart's again, thus alternating from side to side, constantly in an advancing direction until the entire length of the desired approximation is traversed. The needle is then made to penetrate the external oblique and skin appearing on the surface 1 to 2 cms. from the outer angle of the incision.

This is not an over and over stitch, but the wire when drawn taut is perfectly straight. The point of insertion of the needle on one side is opposite to, or but very slightly in advance of, the point of exit on the other side. Each grasp of the needle should be about 1 cm. in length and care should be taken that no kinks occur in the wire.

When there is considerable space external to the cord produced by the early divergence of the muscles from the ligament, it is advisable to take one or more grasps of the suture external to the cord. Only sufficient opening should be left to permit the passage of the cord without obstructing its circulation. After the first wire has been introduced, the cord, which has been held to one side, is now restored to its normal position; a second wire, taking in the edges of the divided external oblique, passes from without inwards, closing this aponeurosis over the cord, leaving but sufficient opening at the inner angle for the cord to pass into the scrotum.

The cutaneous edges are now closed by a third subcuticular wire and the operation is finished. The

opening by the constant pressure which it exerts, producing atrophy and displacement of the edge of the muscles as well as of the tendon.

The principal part of the operation consists in the closure of this opening to a size only sufficient to permit the exit of the cord. This is done by approximating the free edge of the conjoined tendon and the muscles to the inner edge of Poupart's ligament by means of sutures. Fortunately the muscles and tendon are

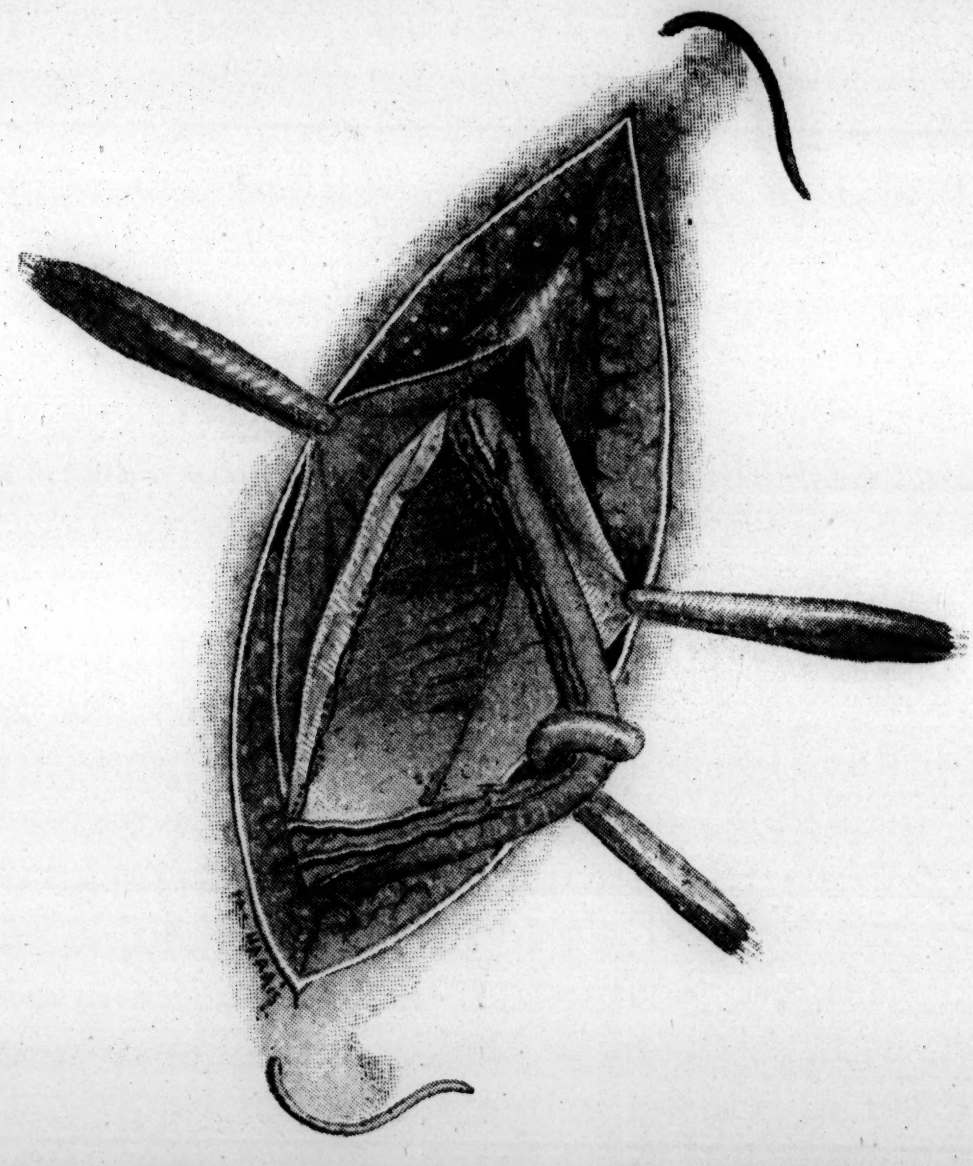


FIG. 1—Showing the coaptation of the muscles and tendon to the inner edge of Poupart's ligament by the introduction of the first wire.

usually sufficiently well developed to form good firm tissue for closing this defect. The approximation should be made from within outwards, the cord being crowded outwards to the angle formed by the divergence of the origin of the muscles from Poupart's ligament.

The union between the approximate edges should be as firm as possible. To this end the loose connective tissue covering the ligament and lying between this structure and the edge of the arch should be re-

moved in order that the approximate edges may lie in immediate contact. To maintain this intimate contact, I have introduced the longitudinal wire suture, which possesses many distinct advantages. This suture is introduced in the following manner: No. 22 or 23 silver wire is threaded directly to a curved, round, non-cutting needle. This enters the skin about 1 to 2 cms. from the inner angle of the incision and passes obliquely down to the inner edge of Poupart's ligament. The needle takes a grasp of this structure not to exceed 1 cm. in length in a longitudinal direction, but so as to cross some of its fibres.

A similar grasp is now taken of the conjoined tendon, then of the inner edge of Poupart's again, thus alternating from side to side, constantly in an advancing direction until the entire length of the desired approximation is traversed. The needle is then made to penetrate the external oblique and skin appearing on the surface 1 to 2 cms. from the outer angle of the incision.

This is not an over and over stitch, but the wire when drawn taut is perfectly straight. The point of insertion of the needle on one side is opposite to, or but very slightly in advance of, the point of exit on the other side. Each grasp of the needle should be about 1 cm. in length and care should be taken that no kinks occur in the wire.

When there is considerable space external to the cord produced by the early divergence of the muscles from the ligament, it is advisable to take one or more grasps of the suture external to the cord. Only sufficient opening should be left to permit the passage of the cord without obstructing its circulation. After the first wire has been introduced, the cord, which has been held to one side, is now restored to its normal position; a second wire, taking in the edges of the divided external oblique, passes from without inwards, closing this aponeurosis over the cord, leaving but sufficient opening at the inner angle for the cord to pass into the scrotum.

The cutaneous edges are now closed by a third subcuticular wire and the operation is finished. The

ends of the wires, which are left long, are folded over a pad of several thicknesses of gauze. A strip of adhesive plaster crosses each end of this pad, fixing it to the body so that it cannot slide during movements of the patient and thus draw on the wires. The usual dressing of sterile gauze is then applied.

The operation as above described is applicable to the large majority of the cases of inguinal hernia. I have used it repeatedly in herniæ of all sizes up to

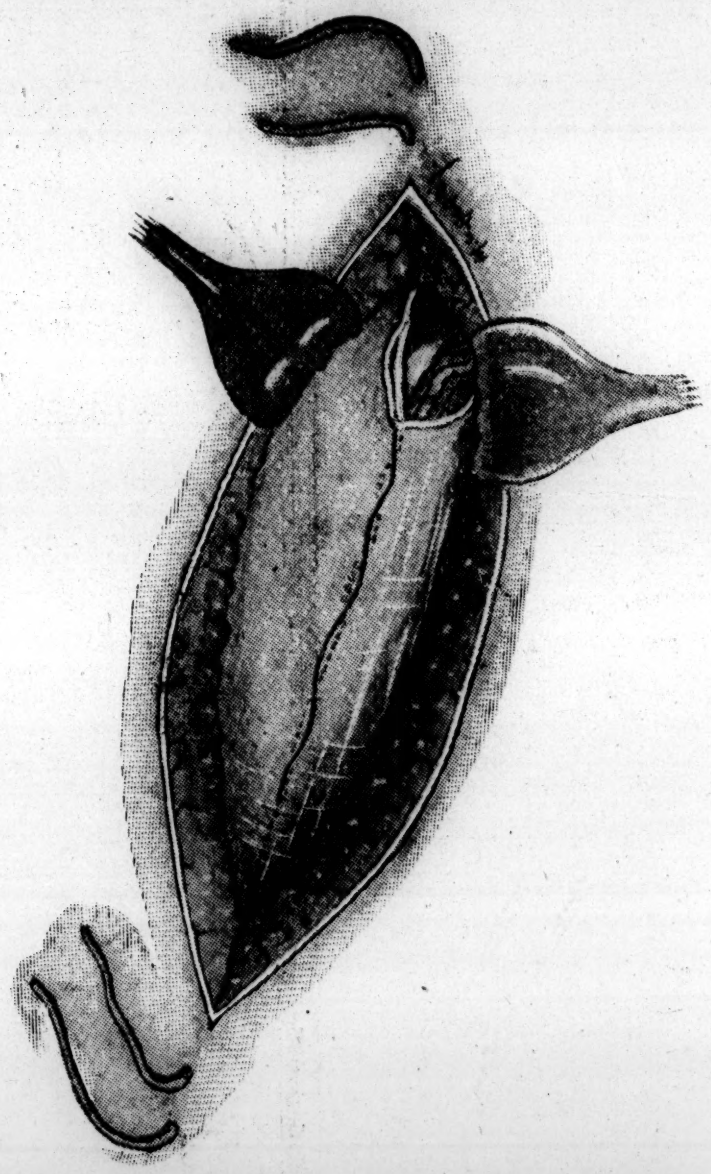


FIG. 2.—Showing second wire closing external oblique over the cord.



FIG. 3.—Showing the third subcuticular wire inserted.

larger than an adult's head. The size of the hernia is immaterial so long as we have good firm muscles and conjoined tendon to close in the defect.

When, however, these muscles are imperfectly developed, or have become atrophied or almost obliterated from prolonged pressure, some other tissue must be substituted for them. It is in such cases that the transplantation of the rectus muscle after the method of Bloodgood and the imbrication method of Andrews find their most useful application.

The distinct advantages of the longitudinal wire suture, however, still obtain regardless of the particular tissue employed to close the defect.

The sutures should be allowed to remain two to three weeks, when they should all be withdrawn. To remove the sutures they should all be loosened by gently drawing them back and forth. One end is then cut short and the wire withdrawn.

The advantages of the longitudinal wire suture are several. The wire can be easily and certainly sterilized. It is non-hygroscopic, therefore stitch-hole abscesses do not occur. It maintains an accurate coaptation of the edges without constricting the tissues within its grasp.

When its function as a suture has ceased, it may be easily removed, thus leaving no foreign material to become extruded at some future time. It is non-absorbable, hence cannot soften and permit the edges to separate before firm union has taken place.

NOTE.—For the past few months I have been using aluminum-bronze wire in place of silver. It possesses the following advantages over the silver wire: Much greater tensile strength; therefore a smaller wire can be used—No. 26 or No. 27. Greater rigidity; therefore, withstands greater tension. Does not "kink" so readily; therefore easier to sew with. It does not oxidize and its effect on the tissues is as favorable as that of the silver.

DISCUSSION.

DR. JAMES E. MOORE, of Minneapolis, Minn.: I am glad to hear this practical paper upon a topic in which we are all interested. One remark the doctor made about the cord still being present with us reminded me of a personal experience I had a number of years ago in connection with Dr. Wheaton, of St. Paul, who is now present. At that time, when we were all having more failures than we looked for after operations for hernia, I made the remark in discussing the subject that I believed if I could have the privilege of castrating my patients and removing the cord, I could get a successful result every time. After the meeting was over, Dr. Wheaton told me that he had believed that until he had operated on a fat cook who had a relapse. I have forgotten whether he operated a second time or not. At any rate, he finally told the man that if he would allow him to remove the testicle he would get a good result. This was done, and

the man had a relapse as promptly as before. Just that point reminds us that we still have the cord with us, and that experience teaches us that it will be of no avail to do as some other man has suggested, who wanted to excite attention, namely, to transplant the testicles to the inside of the abdominal wall. Even that would not help us. In fact, the most ancient radical operation for hernia consisted in removing the testicle and closing the rings.

The question of proper suture material is a very appropriate one. I have not used silver wire; I may use it in the future. I never bury it and leave it there, because our friends in Baltimore and elsewhere who bury their sutures do not take them out themselves, but the rest of us do it for them. You all know how difficult it is to take out silkworm-gut when it is buried, and if you do not take it out, somebody else takes it out for you. If we can get a suture like silver wire that we can remove, as the doctor says he can, it is going to be a great help to us, and we should be grateful to him.

DR. A. C. BERNAYS, of St. Louis, Mo.: I think the method suggested by Dr. Harris has the earmarks of being in line with the principles of surgery. It gives the tissues rest and allows them to heal under the influence of rest. As I have not tried it, I propose to stick to my old rule, and that i not to give an opinion until after I shall have used this method of using wire sutures.

DR. D. S. FAIRCHILD, of Clinton, Ia.: One can hardly discuss a matter of this kind without having had some personal experience with the longitudinal wire suture. I have had during the last year or so considerable observation and experience in operating for the radical cure of hernia, but I have not employed this suture; therefore I am not qualified to say anything bearing on the subject. But, as Dr. Bernays has said, it seems to be in the line of surgical advancement, and the time may come when its full merits will be settled, and, I should judge, in its favor.

OOPHORECTOMY FOR GRAVE FUNCTIONAL NERVOUS DISEASES OCCURRING DURING MENSTRUATION.

BY D. C. BROCKMAN, A. M., M. D,
OTTUMWA, IA.

It is not my intention to question the dictum, "Never remove healthy ovaries," but rather to note an exception to this very good rule. Neither do I intend to enter the realm of speculation and try to explain why some women suffer from serious nervous trouble at the menstrual molimen and at no other time. I greatly prefer to explain the whole affair by

the indefinite but very convenient term "reflex." We all know most women show more or less nervous phenomena at this period, usually so moderate that it cannot be looked upon as pathological, but at times we see a case in which the nervousness is greatly exaggerated,—the woman is irritable and restless, or she may have gone a step farther and become so unreasonable and so nagging that life becomes a burden to the rest of the family at such times. After a while we see her becoming suspicious, despondent, frequently recalling some former indiscretion of her husband, or friend, and, using it as a foundation, builds imaginary crimes or offenses mountain high, only to be followed later by well-marked delusions, usually of persecution. At first our patient's condition returns to the normal as soon as menstruation stops, but after months or years we see the irritation begin a few days before the flow and last afterwards that much longer, and in time we realize that she does not return to the normal, but gradually lapses into insanity in some one of its many forms. Such patients are usually in poor physical health, suffer from painful menstruation and learn to dread the period, and not infrequently have bad family history. Again, the patient may drift into the opposite direction. Instead of depression her obliquity may all tend to emotional conditions, and we have on our hands a case of menstrual hysteria, the monthly explosions occurring regularly and growing worse. Frequently in such cases, in spite of sedatives, moralizing, douching, etc., the convulsions assume more and more of an epileptic character, and we find we have a case of hystero-epilepsy. Another class of fairly healthy girls, with or without a bad nervous family history, are seized by a well-defined epileptic fit, possibly two or three in rapid succession. In a month or two they recur, and afterwards continue more or less regularly every month, and ere long the mother, or some friend, observes that the fits occur always at menstruation, and the doctor has a case of menstrual epilepsy; and in spite of the treatment, he sees his patient growing worse, and in time she has intermenstrual attacks and soon is an ordinary epilep-

the man had a relapse as promptly as before. Just that point reminds us that we still have the cord with us, and that experience teaches us that it will be of no avail to do as some other man has suggested, who wanted to excite attention, namely, to transplant the testicles to the inside of the abdominal wall. Even that would not help us. In fact, the most ancient radical operation for hernia consisted in removing the testicle and closing the rings.

The question of proper suture material is a very appropriate one. I have not used silver wire; I may use it in the future. I never bury it and leave it there, because our friends in Baltimore and elsewhere who bury their sutures do not take them out themselves, but the rest of us do it for them. You all know how difficult it is to take out silkworm-gut when it is buried, and if you do not take it out, somebody else takes it out for you. If we can get a suture like silver wire that we can remove, as the doctor says he can, it is going to be a great help to us, and we should be grateful to him.

DR. A. C. BERNAYS, of St. Louis, Mo.: I think the method suggested by Dr. Harris has the earmarks of being in line with the principles of surgery. It gives the tissues rest and allows them to heal under the influence of rest. As I have not tried it, I propose to stick to my old rule, and that is not to give an opinion until after I shall have used this method of using wire sutures.

DR. D. S. FAIRCHILD, of Clinton, Ia.: One can hardly discuss a matter of this kind without having had some personal experience with the longitudinal wire suture. I have had during the last year or so considerable observation and experience in operating for the radical cure of hernia, but I have not employed this suture; therefore I am not qualified to say anything bearing on the subject. But, as Dr. Bernays has said, it seems to be in the line of surgical advancement, and the time may come when its full merits will be settled, and, I should judge, in its favor.

OOPHORECTOMY FOR GRAVE FUNCTIONAL NERVOUS DISEASES OCCURRING DURING MENSTRUATION.

BY D. C. BROCKMAN, A. M., M. D,
OTTUMWA, IA.

It is not my intention to question the dictum, "Never remove healthy ovaries," but rather to note an exception to this very good rule. Neither do I intend to enter the realm of speculation and try to explain why some women suffer from serious nervous trouble at the menstrual molimen and at no other time. I greatly prefer to explain the whole affair by

the indefinite but very convenient term "reflex." We all know most women show more or less nervous phenomena at this period, usually so moderate that it cannot be looked upon as pathological, but at times we see a case in which the nervousness is greatly exaggerated,—the woman is irritable and restless, or she may have gone a step farther and become so unreasonable and so nagging that life becomes a burden to the rest of the family at such times. After a while we see her becoming suspicious, despondent, frequently recalling some former indiscretion of her husband, or friend, and, using it as a foundation, builds imaginary crimes or offenses mountain high, only to be followed later by well-marked delusions, usually of persecution. At first our patient's condition returns to the normal as soon as menstruation stops, but after months or years we see the irritation begin a few days before the flow and last afterwards that much longer, and in time we realize that she does not return to the normal, but gradually lapses into insanity in some one of its many forms. Such patients are usually in poor physical health, suffer from painful menstruation and learn to dread the period, and not infrequently have bad family history. Again, the patient may drift into the opposite direction. Instead of depression her obliquity may all tend to emotional conditions, and we have on our hands a case of menstrual hysteria, the monthly explosions occurring regularly and growing worse. Frequently in such cases, in spite of sedatives, moralizing, douching, etc., the convulsions assume more and more of an epileptic character, and we find we have a case of hystero-epilepsy. Another class of fairly healthy girls, with or without a bad nervous family history, are seized by a well-defined epileptic fit, possibly two or three in rapid succession. In a month or two they recur, and afterwards continue more or less regularly every month, and ere long the mother, or some friend, observes that the fits occur always at menstruation, and the doctor has a case of menstrual epilepsy; and in spite of the treatment, he sees his patient growing worse, and in time she has intermenstrual attacks and soon is an ordinary epilep-

tic, while attacks are always worse at her periods. These, in brief, form a class of cases that we claim constitute exceptions to the rules just above mentioned, for I have never seen a case of well-marked insanity, hystero-epilepsy, or epilepsy occurring only at the menstrual epoch cured by any form of treatment so long as menstruation continues, and the older doctors present have seen many such cases go down without remedy.

I do not claim that all of these cases can be cured by an operation, but we know by experience and observation that a large per cent. can be cured by early oophorectomy. Women with bad family history, suffering from either of these conditions, may continue to grow worse after operations, but even these are frequently cured, while cases with negative family histories offer very encouraging prognosis if operated sufficiently early. Statistics here, as elsewhere, are misleading, as there are so many factors entering into the consideration of each case that influence results. For this reason I have not attempted to compile any statistics on the subject, but from a careful study of the literature, and personal communications from many of the leading gynecologists of the country, I would say that any patient suffering from recurring attacks of insanity at menstruation or from insanity that occurred first at a period and is regularly worse at each period should have the benefit of the doubt. That every case of well-marked hystero-epilepsy or epilepsy occurring only at menstruation should have a carefully done, complete tubo-ovarian ablation at the earliest possible moment. The earlier the operation is done the better will be the chance of cure, and we can assure the patient or her friends that when the trouble has not been over one to one and one-half years, the prospects are very good for cures; that from two to three years a considerable per cent. can be cured, probably one-half, but after three years the epileptic habit has been so firmly fixed that the chances of cure are very much lessened; but even here, or later, nothing is to be lost by the operation, and it should still be tried, provided the fits confine

themselves to the menstrual week. Unfortunately before this time, in most cases, we find the attacks occurring at any time, without regard to menstruation. In such cases no benefit should be expected from artificial arrest of menstruation. With this general statement I will leave the subject, hoping the discussion will bring out many points that time will not permit me to enumerate.

I append herewith four unrecorded cases coming under this head on which I have operated during the past few years.

Case I.—Mrs. D. E., aged 34; menstruated at 14 years; no children; came under my care in the spring of 1891. Family and personal history unimportant, except has always suffered greatly from dysmenorrhea. Uterus and ovaries small, but not grossly diseased. Menstruation regular, but very painful, and accompanied by hysterical convulsions, with one or two days each month of well-marked hysterical mania. At such times would destroy clothing and bedding, requiring constant watching till cessation of menstruation, when the storm would subside. She has been treated without benefit for years, and, after four or five months' observation, with no improvement, I did a double oophorectomy. Three days after operation had a slight convulsion, but none since, and within a year she was perfectly well and has remained so ever since; has never menstruated, but has increased twenty pounds in weight, and eight years after operation writes me that she is perfectly well and happy and caring for an adopted boy and girl.

Case II.—Lizzie B., aged 21; came to me June, 1897. Family history negative; personal history good until five years ago, when, during her second menstrual period, she had an epileptic attack. The next month she had two attacks, then none for a couple of months, when they returned at almost every period. When she came under observation was having three or four each day or two or three days, at times eight or ten a single day. The number of days in which she had convulsions increased, so it was not infrequent for the attacks to appear three or four days before the

flow and continue as long afterwards, so she was liable to have attacks almost half the time. She had taken all kinds of treatment, but had gradually grown worse, was very despondent, and said that she would put an end to her life rather than suffer the shame of her affliction. I looked upon the case as well-nigh hopeless, but felt that her only remedy was an artificial menopause. To this she gladly acceded, and on September 11, 1897, I did a double salpingo-oophorectomy, being very careful to remove the entire tube down to the uterine cornua on each side. For a month or six weeks after the operation I gave her big doses of bromide to break up the epileptic habit. During this time she had one or two very light attacks; then they recurred more frequently, and for five or six months she was as bad as ever and completely discouraged. Early in June, 1898, they entirely stopped and have not returned since, now almost eighteen months. She is entirely well and happy, lost all her epileptic appearance, and looks on her past trouble as a horrible nightmare. It is yet too soon to pronounce final judgment, but the case looks very hopeful.

NOTE.—Since writing the paper the patient reports that at breakfast the day before she had a very hard fit, the first one for over eighteen months.

CASE III.—Miss W., aged 22; was sent to me by her physician during the fall of 1897 with this history: About five years ago she began having epileptic attacks during her periods. They were exactly like an uncle had with whom she had associated considerably. In a year or two she began having intermenstrual attacks, as well as at periods. During the spring and summer of 1896 she had amenorrhea for eight months; during which time she had no attacks, but on the advent of menstruation in the fall the fits recurred and have continued ever since, occurring always at menstruation, but not infrequently during the intervals. At first I declined to operate on account of the chronicity of the case, but afterwards, at the earnest solicitation of the patient, I consented to try the experiment. Operated October 14, 1897. During the first three months she had a few light attacks,

when they ceased for about ten months, only to recur last summer, and are now occurring occasionally, but not so bad as formerly, either in frequency or in character of fits. If we had been operating only for the purpose of statistics, this case would have been rejected, as it is, we gave her what chance there was and feel that we did the right thing, as it could not make her condition worse. Sterility in such cases is no detriment, as an epileptic ought not to have children any way.

Case IV.—In February, 1897, I was asked by the attending physician to see Mrs. E. McF., aged 26. I found a pale, discouraged, nervous woman in bed, where she had spent most of the past six months; had been well to a year ago, except dysmenorrhea of a nervous type. Married for four years and never pregnant. Family history bad; mother died in insane hospital and one or two other relations suffering from mental trouble. About a year ago she began suffering from a severe pelvic pain and great weakness, with noticeable depression and debility. The uterus was curetted and tonics administered, with assurance of speedy convalescence. She improved for a time, both physically and mentally, was able to go out visiting, but in a few months was as bad as ever. Last February she was sent to the hospital by her doctors to have oophorectomy performed. I found her anemic, discouraged, nervous, suspicious of every one, said she was losing her mind, slept badly, appetite poor, general condition bad, pelvic condition good; all organs apparently normal, except uterine tenderness. Her husband says she is violently insane for three or four days each month, at which time she talks of suicide; is sleepless entire time, unless heavily drugged. After a few days she partly regains her mind, but at all times she is suspicious of all food and medicine; claims to have important papers in her care which some one is trying to get possession of. She insisted that if her periods were not stopped she would soon become insane. A few days after coming into the hospital menstruation appeared, and with it a violent mania, during which she jumped through a window

and was caught by her clothing and pulled back just in time to save her from a fall from the third story of the building. She was removed to a place of safety and watched closely for four days, when the storm subsided and she was as before. March 13, I removed apparently healthy tubes and ovaries and suspended the uterus. The third day after the operation she again jumped through the window and was again pulled back by her attendants. Restraining straps were now put on and she would not allow them to be removed while in the hospital. Notwithstanding her active exercise no harm was done, and she had a perfectly normal physical convalescence. Her mind gradually improved so that she could be removed from the hospital, in three weeks after the operation, to a friend's home, but was despondent and doubtful as to the results until after she had passed the time for menstrual period without any evidence of their recurrence, when she improved more rapidly. Six weeks after the operation she was cheerful and happy, confident that she soon would be well. At times she gets discouraged for a day or two, but soon regains her courage; is able to do her housework and says will soon be as well and strong as ever.

The results in these four cases are not perfect, and three of them have been operated within three years, so that it is too early to say yet what the ultimate result will be, but I am certain that I could not have obtained as much improvement by any other means. The first case is cured; No. 3 is greatly improved; No. 2 is much improved and in hopes entirely cured; No. 4, greatly improved, with good grounds for hopes of entire recovery.

Our cousins, the alienists and neurologists, look upon these operations very skeptically, say that there is no such thing as menstrual epilepsy; that if there is, it has never been cured by surgery, etc., but careful observers and able diagnosticians have repeatedly pronounced these cases epilepsy and perfect, permanent cures have been obtained by removing the periodically recurring molimen that excites these explosions. The same may be said of insanity of this

character. Enough cases have been cured to overthrow all theoretical arguments that can be urged against the procedure. Facts are stronger than theory. It is only by patient, painstaking work along this line, with honest reports made three or four years after the operations, that we will learn on what cases to operate and what not; but one thing is certain, no more pitiable cases come to our rooms than the women suffering from the grave functional nervous diseases and none deserving of more careful, scientific, conscientious study than they, and the doctor will not have lived in vain who succeeds in curing even a few of these poor unfortunates.

DISCUSSION.

DR. JOSEPH EASTMAN, of Indianapolis, Ind.: This paper recommends itself largely through the strong, forward, conscientious description the doctor has given of his cases, and also his honest expressions as to the results. It is no doubt true, as the doctor intimates, that many of these cases can be cured by a timely salpingo-oophorectomy, which places the pelvic organs in a condition of rest and thereby enables the entire system to regain its equilibrium and restore reason as well. One thing which puzzles us a good deal is to know what is menstruation. We thought at one time that the removal of the ovaries would stop menstruation; Tait thought by taking out the Fallopian tubes he would succeed in preventing menstruation. He finally admitted that in 15 per cent. of the cases menstruation still continued. In my cases, from 15 to 20 per cent. of them continue to menstruate as regularly as before. Furthermore, I recall a published report of a case in which there was complete removal of the uterus by supravaginal amputation of the ovaries and tubes, and menstruation still continues. I have in mind a case in which I made a complete panhysterectomy, removing the ovaries, tubes, uterus, and taking the cervix. For six months thereafter there was a sort of periodic hemorrhage every twenty-eight days, which came out through the cicatrix in the vagina. I think we have to acknowledge that menstruation is due to some automatic menstrual ganglia, which needs further study and investigation. It is evident that the tubes and ovaries and uterus are not essential to the discharge of blood. I was in hopes that the essayist would throw some light upon a line of thought which I have mentioned on several occasions, and which would enable me in every case to determine whether the manifest mental condition is due to a reflex cause in the pelvis, or to the famishing nerve cells expressing themselves through the uterus, ovaries, and pelvic organs. There is a class of cases to which the doctor refers that are living in death and dying in life; they become desperate, and where we are clearly satisfied that the pelvis

has to do with this desperate mental condition, where reason is dethroned, and that is worse than death, we are justified in removing the ovaries and tubes and uterus.

DR. O. BEVERLY CAMPBELL, of St. Joseph, Mo.: I was very much interested in Dr. Brockman's paper, and I agree fully with the compliments paid to the essayist by Dr. Eastman, and I do not want Dr. Brockman to take any exception to what I may say in discussing his paper. To begin with, I do not believe that any neurotic patient, who is the subject of hystero-epilepsy, or has spells of explosions of the nervous system, should have the ovaries removed where there is no evident pathologic condition. I never attempt to remedy or treat these cases by resorting to such a method. I recall a case which is possibly a little foreign to the doctor's paper, but nevertheless in the same line. A young married woman of very good family, in the city of St. Joseph, was troubled with hystero-epilepsy, the attacks occurring once a week, and due to the movement of her bowels. She dreaded the functional act and usually used some astringent when necessary to ward off this occurrence as long as possible. I tried every means available, even moral suasion. I could find nothing wrong with the young woman except that she was of a neurotic type, and finally, when I failed in every way, she fell into the hands of a homeopath. This man was an orificial surgeon. He operated upon her cervix, external os, meatus urinarius, the vulva, and upon the rectum. He assured her that a cure would follow, and I am here to testify that I have done no more business in that family, and the woman is well, so far as I know. I recall operating upon her brother for appendicitis, and at that time she said to me, "Doctor, I think you are a great surgeon, but you could not cure me." I said, "That is right, madam."

It is my opinion that in these cases all the good there is in surgery is the suggestion that it carries with it. I would just as leave make an incision through the skin and superficial fascia and assure my patient that she would get well in a case of this kind as to go further and remove the ovaries and tubes. It would be better if the majority of women did not know they had any ovaries, and I am satisfied the majority of them would be better off if they did not know it. As long as nature has given them the ovaries and they are not at fault, or we cannot find any pathologic condition in them, it is not justifiable to unsex women. This is a great question, and one that has been up for discussion before. We are not here to score Dr. Brockman. That is not the principle. The principle, as suggested by the president, is to voice the honest sentiments of the society in regard to such an operative procedure in this class of cases. If this were a popular procedure, the gynecologist would get too much to do, and about half of the women we come in contact with ought to have their ovaries removed. The paper presented by the president last night is along this line. He told us that we were becoming neurotics and were degenerating right along. It is true. The trouble with Dr. Brockman's patients is they should have been bred differently, and the doctor has undertaken to help nature by taking a part of the apparatus out. The trouble with these people is they

need more apparatus. If we could add something to them, the balance of them would be better off, in my judgment.

DR. W. J. WILLIAMS, of Adel, Ia.: It does not need a gynecological surgeon necessarily to enter into the spirit of this paper. Anyone who has given the subject thought and has come in contact with women in the sick-room is able to formulate some conclusions as to the chance of recovery of these individuals. It is certainly extreme ground for surgeons to take that these casès necessarily need operation. There are too many elements in the mental and physical problem of the individual to allow us to get one-sided on this question. Until we can take in a wider scope of the subject, and look at it from all standpoints, we will not be able to do it justice. There are many questions coming up when a case presents these psychic conditions, and because of the unfortunate fact that she is a woman need not bias our opinion at all. Because she has these organs is no reason why we should unsex her on account of her mental condition, unless there be unmistakable pathological conditions. How far these organs have to do with the mental condition of the patient, and how far we can correct the disturbed mental condition by the removal of these organs, is certainly a question of importance, not alone by surgery, but by careful treatment along other than surgical lines. But I want to call attention to the fact that the individual must be treated; that in treating the patient during the developmental period we have developmental neuroses to contend with, there being a want of that perfect balance of the individual's nervous system resulting from nutritional, defective, and fatigue neuroses of the schoolroom. Lack of nutrition and of blood supply is the key-note to the situation of the patient being mentally unbalanced. But that is not only true of the condition under consideration, but all through the periods of child-bearing. Especially would I call attention to the fact that we come in contact with this class of cases during the declining period, when the nerve force of the individual is wanting in balance because of the nutritional or defective vices that are present, because of ptomaine poisoning, of unhygienic living, etc. Lack of perfect balance brings about conditions that are not amenable in many instances to the surgeon's knife, and the surgeon who operates for symptoms alone falls short of doing his duty to his clientele. This should certainly be our position: Operate for pathological conditions alone with the hope that we can restore that perfect balance of the system whereby the mental mechanism will go on in perfect working order.

DR. D. S. FAIRCHILD, of Clinton, Ia.: This question cannot be settled by any theoretical considerations, but must be determined entirely by practice and experience. Dr. Robert Battey thought he had discovered a means of curing very many of these distressing cases by removing the ovaries. I suppose that at the beginning Dr. Battey's experience was as favorable as that of Dr. Brockman, and from it he concluded that it was possible to cure a very large percentage of the cases by this operation. Every practitioner here, who has had considerable experience, has encountered some very

dark places in his professional career, characterized by the distressing results that have come from operations for the purpose of removing tubes and ovaries that were not diseased, but were removed for the mere purpose of relieving nervous conditions. I surely can point to some of my own experience regarding some cases that I have operated upon, and from this experience, and what I have learned from the experience of others, I would not in any case remove healthy tubes and ovaries to relieve a nervous condition, because I doubt very much if it is possible to remove any of these conditions by oophorectomy unless there be disease of these organs. If the ovaries and tubes are diseased, and the pathological conditions are unmistakably clear, we should give the patient the benefit of what may come from an operation; but to operate upon neurasthenic patients is not, as a rule, attended by success. I have met with cases of floating kidney which gave rise to a considerable number of nervous symptoms, almost altogether nervous symptoms, and I have had some satisfactory results by operating. But if there had been symptoms of local disease, the source of irritation being either in the pelvis, or in the nature of a floating kidney, then an operation would generally give rise to considerable relief. But the relief which comes from removing healthy organs is not permanent, and I believe the good results are more in the nature of a coincidence than relief from the operations themselves.

DR. J. W. COKENOWER, of Des Moines, Ia.: I wish to add my experience in discussing the class of cases under consideration, and to report briefly a case. In the first place, I wish to state, in reference to what Dr. Fairchild has said, that my experience thus far has been, when we have hystero-epilepsy extremely marked, the tubes and ovaries are either deranged or diseased, and that in the majority of cases when we operate we will find pathological conditions sufficiently marked to warrant us in resorting to surgery. The case I have in mind was a typical one of hystero-epilepsy, and in my opinion there was also pyosalpinx connected with it, but the latter condition was not clear to my mind until the operation. The convulsions in this case became so frequent that there was scarcely any intermission between them at the menstrual period. The patient was bordering on insanity. One gentleman in the discussion said that we ought not to unsex these patients without some justifiable reasons. That is true, and yet, at the same time, the cases that have come under my observation have been those where the sexual appetite was a thing of the past; the ovaries were of no use whatever to the patient, and were only a source of annoyance. I believe in such cases we are justified in operating. Referring to the case I began to report, the patient came under my observation about a year ago, and I did a double oophorectomy. The result has been satisfactory. The woman was 26 years of age. The convulsions began a few years previously, gradually grew worse, and since the operation her life is much better and more enjoyable. In a few other cases which I call to mind now the results were likewise satisfactory following surgical interference. The point I wish to emphasize is that in typical cases of hystero-

epilepsy, either by a bimanual or other examination under the influence of an anesthetic, where we can detect disease of the ovaries or tubes, an operation is justifiable.

I have been very well pleased with the paper, and I am glad Dr. Brockman has brought up the subject for discussion.

DR. H. C. CROWELL, of Kansas City, Mo.: This question is one of such paramount importance that I cannot let the opportunity pass without expressing my personal feelings upon the subject, and I do it more as a means of warning, after having had some considerable experience, than for any other purpose. To have the younger surgeons who are present go away from here with the idea that they are going to cure cases of epilepsy, cases of mental aberration occurring at the menstrual period, or any other manifestations of a neurotic character, is wrong, absolutely wrong. We may cure cases, and do not understand me to say that we will not, but I want to warn you to be exceedingly guarded in your prognosis when such cases present themselves to you. It has been my custom—and the longer I deal with such matters the more I am satisfied with it—to advise patients in this way: I cannot promise you a thing; you may be just as bad after the operation; you may be worse; but if there are indications of a pathological character sufficient to justify an operation, I am willing to undertake it. I never operate for the relief of symptoms. Of course, in our early days, when we began to use the knife and to make the blood flow, we got the fever, and sometimes it is one kind, and sometimes another. We got the desire to operate a good many times, but after a while that oozed out, and we perhaps need now transfusion occasionally, but the longer we are in the work the more conservative we will be. There are cases no doubt that are benefited by an operation. Out of quite a number I have had but one signal case which proved so satisfactory that I am willing to report it.

A young woman, 26 years of age, had had menstrual epilepsy, and in fact had had some intermenstrual seizures, but they were more severe at the menstrual period. She became so bad that she did not venture upon the street unattended, and received a severe burn in her home, falling on a hot stove, and will carry the scars through life. She was treated in various ways by neurologists and general practitioners, and some years ago, when the Gynecological Association met in St. Louis, she was taken there and examined by five of the leading gynecologists of this country. Ross, of Toronto, examined her; a gynecologist from Michigan and one from Boston examined her; there being five of them who had examined this woman, and declared that there were not sufficient indications to justify operative interference. Hygienic treatment, improved surroundings, and such other remedies and methods as appeared to be indicated were recommended by the various gentlemen. A year and a half later, as a last resort, she was brought to me by the attending physician with a history of what she had been through, not expecting anything, but as a matter of satisfaction to the young woman and her parents, he wanted me to examine her. I examined her per vaginam and could not make out

anything wrong. I continued the examination, as I always do in every case for the first time, by the rectum. I passed my finger as high into the rectum as possible, and with a vulsellum forceps dragged the uterus down, and my imagination led me to believe that I could palpate a varicose condition of the pampiniform plexus of the broad ligament. I was led to suspect this and to look for it from my experience and study with Dr. Dudley prior to taking up the specialty of gynecology. I refer to Dr. Dudley, of New York. Many of you have read his reprints and monographs on the subject of varicose broad ligament. He was one of the early investigators of this subject, and while I was with him I saw several cases, and that perhaps led me to make this diagnosis. So I suggested that in my judgment there was a varicose condition of the broad ligament which perhaps might be the exciting cause of the nervous disturbance at the menstrual period. As the patient had gone through so much, they were ready to accept anything, and she submitted to an operation. As I cut down where I could see the broad ligament, the varicose condition of it was easily discerned. I ligated off the broad ligament with a chain stitch, and removed the varicosities as completely as possible. It is now three years since the operation was done and the patient has had no seizure from that day to this. She has had no recurrence of the epilepsy. Last fall she made a trip, unaccompanied, to San Francisco. She is now in better health, has gained considerably in flesh, and I presume we have reason to attribute the success in this case to the removal of the varicose condition of the broad ligament. How much the psychical influence might have had to do with it I am unable to say, but that is an element which must always be well measured before we undertake these operations, and, as Dr. Fairchild said, this obtains very emphatically in cases of movable kidney. I operated upon a young woman four or five weeks ago who had a great many nervous symptoms. Prior to the operation, I insisted upon her taking the rest treatment in bed for the removal of the neurasthenic manifestations, refusing to operate until she did this. The rest in bed removed the nervous symptoms entirely—the backache, the headaches, and general malaise, and other difficulties that she complained of. I then told her to go about her usual vocation, that she was all right, although I did not think she would be. I took occasion to exercise as much as possible the psychical effect by suggestion, and said to her that the movable kidney will not give you any trouble. In about three weeks she was as bad as ever. I operated upon her, and now she is up and around and doing well, with the report that she has no symptoms.

Another case upon whom I operated last summer was one of prolapsed ovary. She was a young woman, 20 years of age. There was absolutely nothing wrong except the prolapsed ovary. She had had melancholia, and even complete mental aberration for weeks at a time; she was exceedingly hysterical and nervous. She had been in a sanitarium for treatment, had gotten better, then grew worse, and improved again. She had been going on in that way until her father brought her to me. I said to him, if you want this girl

operated on, I will operate, but I can promise you absolutely nothing more than that. I will attempt to get the ovary out so that it can be thoroughly inspected, and if it is healthy, I will not remove it. His inclination was that I should remove the ovary. I found the tubes normal; there were no adhesions, no thickening, nothing except a prolapse. I brought the ovary up with its broad ligament, and how to fix it there I did not know. But I instituted a new operation in this case. I suspended the uterus after the Kelly method, then took a strip of peritoneum along the side of the abdominal incision about an inch and a half long, and brought the broad ligament to the side which was prolapsed, and passed it through one side out through the other, then stitched it back in place, suspending it in a sling, I might say, of the broad ligament. That held the tube out of the pelvis. The patient did nicely for several weeks, but I understand that she has more or less of the nervous symptoms recurring, so that all I desire to accomplish by the little I have said is to warn you in being exceedingly cautious in promising anything, whatever you do in these cases, whether the condition is a normal or pathological one. These neurotic manifestations are sometimes almost a habit, and we have to be very careful to eliminate those and the neurasthenic symptoms that women particularly take on.

DR. BROCKMAN (closing the discussion): I desire to thank the gentlemen for their kind reception of my humble paper, and I wish I had a few minutes' time to discuss some of the points that have been brought up. I wish to say in reply to the question brought up by Dr. Eastman as to the pathology of these cases, that I am not a neurologist; I am not a gynecologist; I am not a pathologist, but simply an humble, plodding, hard-working doctor, who tries by common sense to cure the class of cases that have not been cured by any other means than the one suggested in the paper. I do not claim anything new or original about it. I have tried to select my cases very carefully, picking out those on which to operate, and those upon which not to operate. Several gentlemen have opposed the removal of healthy ovaries for functional nervous diseases, and yet they have not given us anything to take its place. I defy any gentleman on this floor to point out a well-marked case of menstrual epilepsy that was ever cured so long as menstruation existed. I do not care whether the ovaries are healthy or not, but so long as we have a condition here which occurs only at the menstrual period and it can be cured by stopping that period, then I say we ought to give the patient the benefit of the doubt, and in spite of the fact that in 10 or 15 per cent. of the cases menstruation is not stopped after a carefully done tubo-ovarian ablation, we had better give them the benefit of the 85 per cent., as a few of them will be cured. If any of you have a better plan, let us hear it.

With reference to being careful in promulgating such an idea as this and in teaching young surgeons to be exceedingly cautious about undertaking such operations, I did not understand that this paper was read before a county medical society, but before an association of experts—men of mature ideas, who have been thinking along this line and are not

going to operate upon these cases unless they consider it justifiable to do so.

I do not know why an injury of the skull should produce focal epilepsy, but it does so. We know that when an operation is undertaken for the removal of depressed bone, or for the removal of a fragment of bone pressing on the brain, if the case is operated on sufficiently early, a cure is effected. A large percentage of these cases are cured if operated on early. If operated on late, after the epileptic habit has become well established, the convulsions recur. When Dr. Gray, of New York, said in his positive way that no operation, so far done, for the cure of epilepsy had resulted in permanent cure, it was a great shock to me. I had read the able papers, fifteen years ago, of Nancrede and Keen on the cure of Jacksonian epilepsy by operative measures, and I thought it was a good thing, as most of the cases were cured, but in Dr. Nancrede's paper read in Chicago before the Tri-State Medical Society four or five years ago, in which he reported the ultimate results in these seventeen or eighteen cases, in nearly all there were recurrences within three or four years, —the operations had been done too late. Wherever the epileptic habit is firmly established, operations will not afford permanent relief. I do not consider that the patients are made worse by these operations. Our president told us last night in his address how to stop degeneracy, and yet when it comes to removing ovaries, producing sterility, stopping the propagation of the species, we are told that we must not mutilate women unless there is pathology in the ovaries to justify it. Gentlemen, it is all nonsense. We will operate when we can do the most good for our patients, and we will not operate unless there is good reason for believing that the functional disease is due to nervous irritation produced by the menstrual period.

CYSTOSARCOMA OCCURRING SIMULTANEOUSLY IN BOTH OVARIES.

By VAN BUREN KNOTT, M. D.,

SIOUX CITY, IA.

The peculiar histologic structure of the ovary renders it less likely to be the habitat of solid and semi-solid tumors than of the various forms of cystomata, and the surgeon may operate upon many cases of ovarian tumor before encountering one which does not belong to the latter variety. Most text-books, in dealing with the subject of ovarian tumors, convey the impression that solid tumors of this organ are of frequent occurrence. A review of the published cases of ovarian tumors, however, would seem to indicate

that this impression is not correct, and that the proportion of solid growths to the whole number of tumors of this organ is very small. Among the solid tumors of the ovary we find papillomata, fibromata, carcinomata, and sarcomata. Kelly says: "The sarcomata are among the rarest of all the ovarian tumors. The diagnosis 'sarcoma' is often made upon a purely clinical basis, when a microscopic examination would show that a majority of these tumors were fibromata."

Most reported cases of ovarian sarcomata have been unilateral. I have been able to find in the literature at my command but few bona fide cases of double ovarian sarcomata. Joseph Eastman (personal letter) says that in over two thousand celiotomies he has only once encountered sarcoma in both ovaries at the same time. E. C. Dudley, of Chicago (personal letter), says that he considers such a condition very rare. J. M. Baldy (personal letter) states that large sarcomata of both ovaries are very rare and nearly always so adherent to surrounding viscera as to make their total extirpation impossible. Joseph Price (personal letter) says that he has operated upon a few cases of double ovarian sarcomata of large size; all of which were complicated by universal invasion of surrounding tissues. F. H. Martin (personal letter) says that large sarcomatous tumors of both ovaries are very unusual. In one hundred and thirty-eight cases of large ovarian tumors reported by Kelly, in all of which the diagnosis was established by the microscope, there were only two sarcomata.

In a large series of celiotomies made by the writer upon cases of ovarian tumor, sarcoma of these organs has only been encountered twice. In one case there was a large adherent sarcoma of the right ovary which was removed with great difficulty. The patient died eight months later from a recurrence of the disease. The second case is the one reported in full in this article.

From the foregoing we may conclude that sarcoma of the ovary is a very rare form of ovarian tumor, and that this condition occurring simultaneously in both ovaries is still more unusual. For these reasons

I believe that a description of the following case may be of interest:

Mrs. R., aged 47 years, was brought to the Samaritan Hospital at Sioux City in October, 1899, by her physician, Dr. Harmon, of Onawa, Ia.

Previous History.—She has had five children, the youngest now being six years old. No miscarriages. Menstruation had always been regular, and she has enjoyed fairly good health prior to this illness and had always done her own work. She stated that at intervals for the past eight years she had suffered with "grinding pains" in the lower abdomen and had been treated two or three different times for "uterine inflammation." She had felt as well as usual until about three months ago, when she noticed that she was "getting larger," and that her clothing was too tight. She then began to have acute abdominal pain which persisted most of the time and which, together with increasing distention of the abdomen, soon compelled her to remain in bed, where she had been continuously for the past three weeks, as, when free from pain, the great weight and pressure within the abdomen rendered it impossible for her to assume the erect position.

Present Condition.—Patient lies on back with knees drawn up. Attention is immediately drawn to the abdomen, which is seen to be enormously distended. Careful examination reveals the presence of a large quantity of free fluid within the cavity, while on each side is found a large, hard, but freely movable, growth. These seem to be of almost equal size and regular in contour, presenting no nodules or irregularities that can be detected. They seemed to almost fill the abdomen, except in the median line, where, upon firmly pressing the ascitic fluid out of the way, an interval or furrow, about two inches in width, could be detected between them, the firm, hard surface of the tumors rising abruptly on either side. Bimanual examination added no further information, other than that the growths were ovarian in origin, did not present low in the pelvis, and seemed attached by a broad, short pedicle. The patient is extremely weak, much

emaciated, and of very poor color. The evident cachexia, the rapid growth, and the ascites seemed to indicate malignancy, while opposed to this opinion were the facts that the tumors were non-adherent and freely movable, and that she had suffered so long (eight years) with pains similar to those from which she now complains, that the ovaries might have been gradually increasing in size during that time, and their enlargement have been unnoticed until the appearance of the ascites. The evidence seemed, however, to favor the first conclusion. After the usual preparation the abdomen was opened in the median line by a free incision, extending from the symphysis pubis to above the umbilicus. As soon as the peritoneum was incised an enormous amount (estimated three gallons) of straw-colored, ascitic fluid escaped. The tumors were then revealed, as like as two peas, lying side by side, with a slight interval between them. Passing my hand into the abdomen, I could sweep it around both of the growths, as there was not a single adhesion at any point. The one on the right side was then seized with a large vulsellum and drawn outside the abdomen. It looked like an enormous ovary, was of a pearl white color, and, though quite firm in the aggregate, contained several small cysts, varying in size from a filbert to a large orange. It was attached to the broad ligament by a short, broad pedicle. This was clamped close to the ligament and the tumor removed. The vessels were then ligated separately, silk being used for the larger ones and catgut for the smaller. The broad ligament was then united over the stump with a running suture of fine catgut. The second tumor presented exactly the same characteristics as the first and was dealt with in the same manner and the abdomen closed. The operation was practically bloodless, remarkably easy of execution, and only required a very short time for its completion. The patient made an easy and uneventful recovery and left the hospital the twenty-first day.

A section from each tumor was sent to two competent pathologists for examination. Both reported that the growths were cystosarcomata of the spindle-

cell variety. The right tumor was slightly larger than the left. It measured twenty-seven inches in its largest circumference, and weighed nine pounds one ounce, while that from the left side measured twenty-five inches in circumference, and weighed eight and three-quarter pounds. They were almost round in form and in appearance much resembled the normal ovary greatly enlarged.

The points of interest in this case are: 1. The simultaneous involvement of both ovaries by sarcomatous growths, as sarcoma is usually found on but one side. 2. The almost exact similarity of the tumors, it being difficult to distinguish one from the other. 3. The absence of adhesions or the involvement of neighboring viscera, both of which conditions are almost always present with sarcoma of the ovary. 4. The age of the patient (47), as sarcomata usually occur in early life. 5. The fact that the prognosis in this case would seem to be much better than in the vast majority of ovarian sarcomata where contiguous tissues are usually infiltrated by the disease at the time of operation.

It is, of course, yet too soon to consider this case as cured, as the operation was done only three months ago.

DISCUSSION.

DR. J. P. LORD, of Omaha, Neb.: I remember removing a tumor almost identical with one that has been described by the essayist, from a lady 50 years of age, three years ago, and it was the only tumor of the kind which I have ever seen. I took pains to search the literature of the subject at that time, and I find it tallies with what Dr. Knott has said, namely, that this disease is very rare. The tumor which I removed from this woman seemed to be composed entirely of fibrous tissue. There were a few small cysts in the case. There was considerable ascitic fluid, dark in color, which aroused my suspicion at once as to malignancy. The woman lived for two years after the removal of the tumor and, it is said, died from "general decline." I lost track of her, but I apprehend that there was a return of the sarcomatous disease somewhere. Recurrence may have taken place in the other ovary, and since studying the matter more thoroughly, I am of the opinion that I should have removed the appendages from the opposite side in doing the operation, even though the ovary of that side may have been healthy.

DR. A. C. BERNAYS, of St. Louis, Mo.: The subject of neoplasms or tumors is one of the most interesting topics that can engage our attention, and the placing on record of a case, the report of which has been read by the essayist in such a clear manner, giving a full history and a careful de-

scription of all important details, is always to be considered a valuable addition to our knowledge. As the reader showed in his paper, sarcomata of the ovary are rare. In my own experience I can recall three cases of sarcoma—two in children, and one in an adult. In the two cases which occurred in children, if I remember correctly, there were diffuse sarcomata, very soft, mushy, somewhat resembling papillomata, sessile growths, scattered over the mesentery and the omentum. In both of the children the outcome was very bad. There was a return of the disease, or rather the tumors, which were necessarily left, continued to grow and the children died in less than a year. In the case of the adult, the point I want to bring out is this, that we are unable to judge of the degree of malignancy of sarcomata. It is a well-known fact that sarcomata of bones, when thoroughly removed, do not return very frequently, particularly the variety which starts in the medullary canal of bones, grows outwards and extends to the epiphysis. These tumors, when thoroughly removed, are not often followed by a recurrence. The sarcoma of the ovary, which I removed from the adult at about the menopause, was not followed by a return. It is about eight or nine years since the operation was done; but in that case the peritoneal covering of the tumor was intact; the tumor was very soft; I had made a diagnosis of cystic tumor, and was surprised to find a jelly-like mass in the capsule—a myxosarcoma. There was no return in that case, although a histological examination of sections of the tumor plainly showed it to possess all the characteristics of sarcoma.

The subject of malignancy of sarcoma is one that requires much more study; in fact, our notions of malignancy are exceedingly elastic. Some malignant sarcomas grow so rapidly and produce death almost as fast as an intoxication with ptomaines would produce death. I have seen a sarcoma growing from the fascia over the parotid gland so rapidly that one could almost see it growing from day to day, producing rapid emaciation and death. There are malignant ovarian sarcomata which do the same thing, but there are others which do not, and I wanted to relate the case which I had operated on, but in which the disease did not recur.

DR. W. JEPSON, of Sioux City, Ia.: I am very much indebted to the author of the paper, as well as to Dr. Lord, for the thoughts that have been expressed, because it necessitates a complete change, not only in my views regarding tumors, but in teaching the pathology of these growths. During the last four or five years I have been using as the basis of my instruction upon this subject the work of Dr. J. Bland Sutton on tumors, and I have been in the habit of telling my class that sarcoma of the ovary is not so exceedingly rare. Dr. Sutton, I believe, states that from 5 to 6 per cent. of all solid tumors of the ovaries consists of cystosarcomas, and that when a cystosarcoma does exist, it is nearly always bilateral, involving both ovaries. Sarcoma of the testicle is usually a bilateral condition. I am sure that I have no way of knowing whether Dr. Sutton is correct or not. That is the conception I have had regarding the matter, and I am indeed thankful to the gentlemen for this information, because I will have to look the matter up and revise my opinion.

DR. JAMES E. MOORE, of Minneapolis, Minn.: I cannot help but feel that sarcoma of the ovary is very rare, because in a reasonable amount of abdominal surgery I have never met with a case.

DR. JOSEPH EASTMAN, of Indianapolis, Ind.: There is just one thought in connection with this subject, since Dr. Bernays spoke of the elasticity of our knowledge, that I desire to refer to. I recall the case that I reported to the doctor in which the pedicles were quite long; they hung out some length. Speaking of the removal of sarcoma from the osseous system, is it not possible, or even probable, that, inasmuch as sarcoma travels along the connective tissue, and not along the lymphatics, as does carcinoma, that where the entire bone is removed, obeying the surgical law,—remove all the bone to the articulations in each direction,—it makes a complete section or severs the connective tissue along which the disease might travel? The case to which I refer was one in which the disease had not returned at the end of four or five years. I lost track of the patient, but the microscope revealed sarcoma. In view of the fact that one travels along the lymphatics and the other along the connective tissue, it may to a certain extent explain the view expressed by Dr. Bernays, that in some cases upon which we operate the disease never returns, although the evidences of malignancy are pronounced, while in other instances the disease grows very rapidly, so rapidly indeed that one can almost see it grow.

DR. KNOTT (closing the discussion): I wish to thank the gentlemen for their kind remarks on my paper, and in reply to Dr. Jepson I have to say that I think he made a better argument for the rarity of these tumors than I did myself. He stated that from 5 to 6 per cent. of all solid tumors of the ovary were sarcomata. As everyone knows, the proportion of solid tumors of the ovary is only about 1 or 2 per cent. It is stated that solid tumors of this organ are rare as compared with the total number of cases of ovarian tumors, and that only 5 per cent. of solid tumors are sarcomata; consequently the practioner will not meet with many such cases in his practice. I believe it is the universal testimony, both in this country and abroad, that this is the case.

Another point which makes the case unique was the absence of adhesions. In most of the cases, reports of which I have had access to, it was said that there were dense adhesions to the surrounding tissues, making the removal of the tumors difficult and recurrence almost certain.

A CASE OF CYSTIC TERATOMA COMPLICATED WITH HEMORRHAGE.

By E. HORNIBROOK, M. D.,

CHEROKEE, IA.

I present this case for the consideration of the society, not because of anything in its clinical history, but on account of the unusual pathological conditions.

Mrs. P., aged 22; married three years; one child, eighteen months old, which she is nursing; child strong and well developed. Mother always enjoyed good health; small in stature, fair complexion; blue eyes. Has never been conscious of swelling or discomfort in the pelvic or lower abdominal region. Was taken with severe pain while straining at stool, July 18, 1899; fainted and was carried into the house.

Her physician found her almost pulseless, skin cold and clammy, knees drawn up—suffering intense agony, which was only slightly relieved by hypodermic injections of morphia. Small tumor discovered in right inguinal region. Another physician called in consultation on the morning of the 19th. He found abdomen enlarged, tympanitic above umbilicus, dull on percussion over lower part of abdomen, exquisitely tender; constant vomiting; pulse 150, temperature 103°—all the symptoms of general peritonitis, with a large and rapidly increasing tumor in the abdomen. I saw the case on the 20th about 2 o'clock A. M., and diagnosed a hematoma with general peritonitis. I commenced the operation at 8 o'clock the same morning. The parietal peritoneum was greatly congested, dark in color, and friable. A large quantity of dark fluid blood was found in the cavity and some clots surrounding the tumor, which was large and filled the abdomen as high as the umbilicus. The pedicle was short and thick and appeared to be attached to the iliac fascia, the iliac artery being distinctly felt pulsating beneath. The growth was semi-solid and filled with blood. The abdominal incision not being large enough for the de-

livery en masse, I opened the sac and turned out the clots, being careful that none of the contents should escape into the peritoneal cavity. I ligated the pedicle in three sections, placed an additional catgut ligature on the end of the largest artery and sewed the peritoneum, with catgut, over the end of the stump. I then thoroughly irrigated the peritoneal cavity with sterile salt solution at a temperature of 105° F., and continued this until the water came away clear and the cavity was free from clots. No sponges were used. I allowed a large quantity—probably two quarts—of the solution to remain in the abdomen. Patient rallied quickly; indeed the pulse improved and the color of the lips changed as soon as the hot irrigation was commenced. She suffered no pain and did not vomit after the operation and appeared comfortable. I gave a drachm of saturated solution of sulphate of magnesia as soon as she recovered from the anesthetic and continued to do so every hour until I saw death approaching. She died from general peritonitis forty-four hours after the operation.

Macroscopic examination showed that the outer or larger sac contained some blood clots; a smaller tumor was found inside the larger one in which small hard bones could be felt.

I append the notes of the pathologist, Dr. Eli Grimes, to whose painstaking investigation and general courtesy I am much indebted. I also pass around a photograph of the sketch which he made and which illustrates the relation of tumors and the parts excised.

The left ovary and tubes were normal in size and position; the uterus was not enlarged. The right fallopian tube, or remains of it, was as thick as a lead pencil, and extended not more than half an inch from the uterine cornua; its end was smooth and apparently covered with peritoneum. No trace of the right ovary could be found.

The case is, I believe, unique in medical literature. I find reports of several cases where the stump of the tube only was found, but in them there was al-

ways a history of an extrauterine pregnancy or a salpingitis; but in this case there is no history of either —in fact no history of disability or ill-health prior to the commencement of the last illness.

DR. ELI GRIMES' REPORT.

"A cystic tumor, with thick outer wall, containing within a smaller tumor. The covering of outer wall partly peritoneum containing, in a fold, a portion of the fallopian tube with fimbriated end. No ovarian tissue could be discovered. The outer wall contained striated muscle and small, well-developed bones, the type of which could not be determined. This wall was sacculated and contained blood clots. The inner wall, that is, the covering of the small second tumor, was found to be dermal tissue with glands and hair. Within this tissue were many pockets or loculi containing either sebaceous matter or blood, the sebaceous matter predominating. In none of the sacs were the blood and sebaceous matter mixed, but separated by distinct walls. Some of the blood was undergoing organization. No ovarian tissue could be found. No placental structure could be made out. The tissues were too well developed to be fetal. Diagnosis: Cystic teratoma of the ovary, complicated with hemorrhage."

We might say of the growth with Pope:

> "The things we know are neither rich nor rare—
> But wonder how the devil they got there."

That it started in the fallopian tube may, I think, be fairly inferred from the fact that the tube was severed close to the uterus, and from the further fact that part of the tube with its fimbriated end was found in the outer covering of the growth. That it was not an extrauterine pregnancy is shown both by the history of the case and the statement of the pathologist "that the tissues were too well developed to be fetal." Recent scientific research by Prof. Jacques Loeb, of the University of California, might possibly serve to explain the phenomena here presented. His experiments were made during last summer and autumn

with sea urchins, the male and female of which are separate animals. He subjected the unfertilized eggs to a solution of sodium and magnesium and within two hours they hatched, producing "blastulæ," or the first "larvæ." Placed in normal sea water these developed into "gastrulæ," and these into "plutei," the latter bearing the same relation to a sea urchin as a tadpole to a frog. Prof. Norman, of Texas, had previously shown that the eggs of certain marine animals, when unfertilized, had a tendency to develop when sodium or magnesium were added to the water in which they were. Prof. Loeb's researches convinced him that only the presence of calcium and potassium in the sea water prevented the development of all unfertilized eggs, and that all that the milt deposited by the male had to do was to overcome the effect of these chemicals. If the researches of these scientists are confirmed by further observation, we will be forced to conclude that "an immaculate conception may be the result of unusual but natural causes," and that even the human female may be endowed with the potentiality of reproducing the species, if certain chemical substances which have the power, when present, to restrain the cells from dividing and developing, are either neutralized or absent.

In this case it may have been possible that, the chemicals being absent or neutralized, the cells divided and developed in the fallopian tube, and by their growth ruptured and amputated that tube and left an abnormal growth which anchored itself to the pelvic walls and grew slowly without influencing the patient's health, until the straining at stool ruptured a blood-vessel and caused a rapidly fatal termination. This, I know, is speculation, and yet it is speculation with a basis of ascertained facts and is the only speculation which, in my opinion, offers a rational explanation of the growth of dermoid cysts and teratoma.

Some of you may think (and I am inclined to think myself) that it is amenable to Byron's criticism of science—

> "Knowledge is not happiness, and science
> But an exchange of ignorance for that
> Which is another kind of ignorance."

But I leave it with you for what it may be worth, in the belief that if it serves no other purpose it will stimulate thought.

DISCUSSION.

DR. A. C. BERNAYS, of St. Louis, Mo.: This paper opens a field of thought regarding the etiology of teratoma and dermoid tumors which is exceedingly interesting. One of the current theories about dermoid growths is that many of them are instances of what is known as superfetation, or of fetus in fetu; in other words, a dermoid is a twin of its bearer; that the woman is the fully developed twin, whilst the dermoid cyst is her rudimentary twin. That is the theory which is most generally accepted, but it is not satisfactory to all. However, a few dermoids have enough resmblance to a fetus to warrant that assumption, at least to make it very plausible. There is a great field for speculation in regard to this subject and we know that speculation always precedes knowledge or science. The doctor's paper is certainly one which will always be a shining mark in the annals of this association, and as the subject is away above the ordinary man, or even the specialist, I do not feel at all competent to discuss his hypothesis.

DR. W. JEPSON, of Sioux City, Ia.: There is nothing that I can add in the way of interest regarding the paper just read. The doctor, as near as I could learn from the description, spoke of his case as a teratoma, or dermoid, and the conception I have always had regarding dermoids is that they were sequestration tumors, in the sense that Cohnheim used the term, namely, that they were embryonal structures that were lost, and that the testicle, ovary, and parotid gland are particularly liable to these remnants of structures which are used to build up the economy. Thus we may have chondroma in the testicle, dermoids in the testicle, and we also have the same growths in the parotid gland. Whether this conception be correct or not, I do not know. I would be loath to believe that dermoids are due to the growth of an ovum which had been stopped short of developing into a more mature species.

DR. J. R. HOLLOWBUSH, of Rock Island, Ill.: There is only one point in connection with the doctor's paper that I desire to refer to, and that is he has reported a fatal case. Most of us report all of our successful cases with a spirit of pride, while reports of fatal cases are neglected in many respects. It is a good idea, when we have a fatal case, to bring it before the association, and if there was any fault in technique, or in the skill of the operator, there should be a fair and impartial discussion regarding it. The paper was certainly a very interesting one, and as to the hypothesis the doctor offers of the etiology of the subject, I am like the gentleman who preceded me, I have nothing of interest to say.

DR. HORNIBROOK (closing the discussion): I have to thank the members of the association for the kindly manner in which they have received my paper, and although I had no idea that it would be epoch-making, yet I thought that

the recent discoveries in science, made during the last summer, offered a peg upon which to hang a theory as to the development of these tumors. I agree with Dr. Jepson, that the weight of authority is in favor of the theory that they are of embryonic origin, and not superfetation. That they are not superfetation is proved by two facts,—one that we will find them in children. I saw a large dermoid and removed it in a child about eight years of age. We will find teratoma in the male. It might be thought that the fact that it is found in the male or found in a child that was not yet producing ova would be fatal to the theory, but it is not, inasmuch as if we accept the theory that these tumors are of embryonic origin, they develop from ova at first and coming from the female their potentiality of growth is such that it may increase after birth. The theory that it started in the fallopian tubes is, I think, strengthened by the fact that the stump of the fallopian tube is found at one end of the uterus; that the other part of the fallopian tube, with its fimbriated end, is found in the tumor. If it was of embryonic origin and did not develop from an ovum in the fallopian tube, it probably would not have ruptured and amputated the tube, and therefore the theory that it was purely of embryonic origin does not account for the pathological condition; whereas the theory that the ovum divided, developed and grew, as the woman was only a short time married before she was pregnant and was nursing her child at the time, would seem to indicate that the ovum might, in the absence of certain conditions, as pointed out by scientists, have divided and have developed and have grown into the condition represented in this photograph which I have passed around.

CONGENITAL HIP-JOINT DISPLACEMENTS.

By JOHN PRENTISS LORD, M. D.,

OMAHA, NEB.,

PROFESSOR CLINICAL SURGERY AND ORTHOPEDICS, DEAN OF CREIGHTON MEDICAL COLLEGE; ATTENDING SURGEON ST. JOSEPH'S HOSPITAL.

The writer has been so much impressed with the views of Tubby that they are adopted in the title of this paper. He says: "The word 'dislocation,' as commonly accepted, implies separation of those parts of a joint which have been normally in contact. If through an error in development such contact has at no time occurred, I take it there cannot exist a dislocation. Therefore, the word 'displacement' is more accurate. Long usage has sanctioned the expression 'congenital dislocation,' but, I venture to think, without a due appreciation of the contradiction therein

implied. As an example, congenital displacement of the hip may be taken. The pathology of veritable cases teaches us that there has been no perfect acetabulum formed from which the head of the femur could have been dislocated."

With this generally accepted view of the condition, of course, accidental dislocations during delivery are not entitled to be classed as congenital,—a distinction which most writers make. That a considerable number of the cases, as seen in later years, are of this accidental origin can be accepted, for it has been observed to occur in a number of cases. As might be expected, this is notably true of breech presentations. Its occurrence has been demonstrated experimentally by Melicher, of Vienna, upon women who had died undelivered. Reduction was found to be most difficult. The deductions were that these accidents were not likely to occur in well-formed joints. But with deficiency in the development of the upper part of the rim, displacement at birth by breech presentation is very probable.

Other congenital displacements which are most rare have shown themselves to be commonly associated with other malformations, such as acrania, anancephalia, spina bifida, etc.

Congenital hip-joint displacement was found to be present in three cases in 332 infants examined post mortem by Parice. Chaussier observed it but once in 23,293 deliveries. This great difference in observation leads us to seek reasons for it. The subjects of Parice of course furnished an unduly large proportion, as might perhaps be expected in dead infants at a maternity. On the other hand the observation of but one in over 23,000 creates the suspicion that some might have been overlooked. That it does occur in at least one in 10,000 deliveries is probably conservative. All agree that it is much more frequent in girls, and observations have placed the per cent. as high as 88. The statement of Dupuytren, that girls are more subject to deformities than boys, seems as good a reason as any for what cannot be satisfactorily accounted for.

It is more often unilateral than bilateral, and its frequency in the right and left hips is about equal.

The etiology of this deformity may be said to be unknown, and has therefore been a subject of much speculation and discussion. The various mechanical and pathological theories have been discarded by many of our best authorities. The developmental theory is the only one which is supported by pathological research, and many prominent names are given to its support.

Bowlby describes the appearance of the acetabulum of a girl 13 years old, thus: "In the position of the normal acetabular cavity is a triangular depression, which, although it evidently represents the acetabulum, is far too small to have accommodated the head of the femur at any time. * * * The edges of the depression are scarcely raised above the level of the surrounding bone. The upper portion of the normal acetabulum, the iliac segment, appears to have been suppressed, so that the ill-developed acetabulum represented by the above mentioned triangular depression is formed merely by the coalescence of the pubic and ischiatic segments."

Lockwood maintains that "the hip joint is not at first a pelvic socket in which the head of the femur lies, but the acetabulum is formed by a growth of pelvic cartilage up and around the head of the femur. By the third month of intrauterine life this process is far advanced, and the acetabulum is a deep cup."

Tubby believes that in these observations we have the etiology and causation of congenital displacement at the hip. He says also that it is well to bear in mind that in view of the various operations for deepening the acetabulum, that it is originally shallow, is smaller than normal and of unusual shape, and that in truly congenital cases the rim is deficient. These facts alone must throw a shadow of doubt on the reported success of some operators. Are all the cases which are stated to be congenital, and which have been operated on, really congenital and not traumatic or paralytic?"

Dupuytren, Bouvier, Verneuil, Stadfeldt, Caswell,

and Volkmann have observed heredity; the first named in three families, where the condition was present in several members.

The pathology, in brief, is a flattened rudimentary acetabulum, a mere ridge which is usually an irregular triangle. The head of the femur is small, irregular, flattened, and may be somewhat triangular, and rests upon a short neck, with an altered angle. The alterations in the soft parts are the result of the malposition of the bones. The changes in both bones and soft parts are intensified by age and use.

The symptoms are characteristic, and dependent mostly on locomotion. Therefore they are seldom observed until walking is begun, when the child is seen to waddle, and to be the subject of lordosis. The deformity, however, is not very conspicuous early, but becomes much aggravated in bilateral cases after a few years. The limp may be described as a lurch, as of a sudden giving way on the affected side. In bilateral cases it becomes of a waddling, rolling character. The limbs are poorly developed and are noticeably short, there is great breadth of the perineum, eversion of the feet, a growing prominence of the trochanters and very exaggerated lordosis, with ultimate alteration in the pelvis,—the ilia are approximated and the ischia separated and the female pelvis thereby improved for parturition.

Consideration for your time and patience prevents me from discussing fully diagnosis and differential diagnosis. Any well-informed doctor who has had this subject under consideration at all will have no trouble in diagnosis. The writer has had occasion to test the diagnostic ability of his internes and students in three instances during the past year and was always gratified with the celerity with which they made the diagnosis. In this connection I wish to state that these conditions are often persistently overlooked. During the past summer a girl of nine was brought by her physician, for the purpose of having a spinal jacket applied to correct the lordosis in a bilateral case. This case has been seen by all of the doctors who had ever shown themselves in their territory, and

but one minute sufficed for my interne, who had never before seen a case, to make a diagnosis.

In the early years of this deformity the disability is slight, but the limp very noticeable; and in bilateral cases there is the characteristic gait, with a growing tendency to an exaggeration of the symptoms, resultant upon progressive stretching of the soft parts, which yield upon fatigue and cause the conditions to become progressively worse. In persons of good muscular development the conditions remain stationary and they get along with a fair degree of comfort, and even show surprising endurance; while, on the other hand, some cases are lamentably handicapped and suffer greatly; this latter class being continually subject to falls, sprains, and injuries to their affected parts. The conditions are favored by increase in weight and muscular enfeeblement incident to age. The dorsal displacements of course furnish the exaggerated cases. The anterior and superior displacements are not so troublesome. The prognosis is improved by mechanical and hygienic treatment.

The methods of treatment in subjects under 10 years are three, viz.: (1) Extension, either in the recumbent position or by apparatus; (2) forcible reduction; (3) reduction by operative measures.

When we consider what is to be accomplished in these cases, representing such radical defects in the mechanism of the hip joint, our credulity is taxed to believe that much permanent good can be obtained by extension and retentive apparatus, yet most excellent results have been reported. Any success is certainly a tribute to the patience of those who have labored the necessary length of time to accomplish it. One or two years of continuous extension, with several years of added mechanical restraint, painstaking care, and watchfulness, is an amount of service beyond accomplishment in most cases. It is, therefore, a form of treatment which is impracticable except in endowed institutions. Relapses have certainly been so common as to drive surgeons to more satisfactory immediate and ultimate results.

The forcible reduction method introduced by Pici

and improved by Lorenz has furnished results which have seemed to justify still further trial. Under an anesthetic Pici forces the head into as near a normal position as possible, by first flexing the leg fully on the thigh and the thigh on the pelvis, thus carrying the head of the femur downwards. The thigh is now abducted slightly (too much abduction may cause anterior displacement), and the limb strongly rotated outwards and then extended fully. Lorenz uses greater force in extension and in all manipulations and claims actual reduction of the misplacement. Afterwards the limb is put up in plaster or other material for a month, followed by continuous extension for three months with Pici method. Lorenz puts first dressing on for three months without extension. Then walking may be commenced on crutches.

Open incision, the division of resisting structures, the formation of an acetabulum by gauging, and the reduction of the misplacement has been practiced less than a decade with constantly improved results, and while the profession has been slow to accept it as a justifiable procedure, it may be said to have constantly gained in favor. Though it may not yet be established on a firm basis, it would seem to be the only practicable means, especially after the Pici or Lorenz method has been tried. But the writer believes that the Lorenz cutting operation is not a formidable one, and is as fully justifiable as many other surgical operations which are done without hesitation.

The Hoffa operation is made by an incision posterior to the trochanter, and all resisting muscles, ligaments, and the fascia lata are divided, which makes it quite a formidable operation. But the Lorenz procedure, which is made by an anterior incision, quickly reaches the capsule, which is divided together with the Y ligament,—the principal resisting structure as pointed out by Lovett,—when, by enlarging the rudimentary acetabulum, or forming a new one, by trephine or gauge, the head of the femur is brought into position and the leg secured in plaster in a position of abduction and slight inward rotation. The wound is drained and the integument sutured at the angles, it being considered

undesirable to suture the depths of the wound. Drainage is indispensable. The plaster dressing is continued for about six weeks, when apparatus or a long side splint is worn for a time longer—the duration depending upon the depth of the new acetabulum rim. Passive motion is begun and increased with caution. Motion is quite fully restored within a few months. The limp continues for a considerable time on account of muscular weakness and habit, but improvement is progressive, whereas cases without treatment become continuously worse. Some limp always remains because of inevitable shortening in all cases.

The writer submits a single operated case: Harry F., 3 years and 8 months; in good health; was admitted to St. Joseph's Hospital August 15, 1899. Left congenital dorsal displacement of hip, leg five centimeters short. Deformity characteristic, and the lurching limp was very marked. Operated August 20, 1899, by Lorenz method. No serious difficulties encountered. The acetabulum was very small and required much gauging, but was well enough formed to cause me to take some stock in the statement of the parents, who maintained that dislocation took place from a fall from the baby carriage at 14 months. There was a good acetabulum secured and reduction took place with a very audible snap. Hemorrhage was slight and shock therefore inconsiderable. No rise of temperature above 100°, though there was some superficial suppuration after one week. Recovery perfect. Plaster removed in six weeks, when passive motion was begun. A side splint of plaster was applied for convenience, but removed daily. At the expiration of eight weeks he was permitted to walk about, and when he left the hospital, October 26, he had very good motion, being able to sit or walk with little inconvenience. December 20 there was one centimeter shortening. Limp much improved since last observation. Plays all day without more fatigue than other children. While the writer admits that this may have been a traumatic case, yet it shows the possibilities in operative relief. It is not a dangerous operation, as the more recent statistics show. Though the

favorable age for operation is considered to be from 3 to 6, the writer believes that a considerably earlier operation can be done, if pains are taken to guard against infection from urine. The younger the child the less the resistance to reduction, and less cutting is required. Of course operation can be more freely advised in unilateral cases, because only half the risk is assumed. Both for surgical and mechanical reasons, operation appeals to us as the only rational treatment. That increased experience, with improved technique, will establish this operation on a firm basis seems assured.

DISCUSSION.

DR. JAMES E. MOORE, of Minneapolis, Minn.: The subject of Dr. Lord's paper is one that has been especially interesting to me, and I agree with the doctor in the improved title of his paper. I think we will all agree with him that cases of so-called congenital dislocation are not dislocations. As the doctor says, the diagnosis is one of the easiest in surgery. It is also a notorious fact that these cases are invariably overlooked, and right here is a point I want to emphasize very strongly, because it behooves every man, no matter whether he expects to do surgery or not, who claims to be a physician, and meets with flexions of limbs and crooked backs. to know that there is such a thing as congenital displacement of the hip. If he knows there is such a thing, he can always make the diagnosis, and it is the simplest thing in the world. When a child is brought to you with a limp and bending of the knee forward, with evident shortening, but without evidences of inflammation, you can take Nelaton's line and find that the great trochanter drops above it, which will practically establish the diagnosis.

I agree with Dr. Lord fully with reference to his ideas of treatment. I have forgotten whether he made this restriction, however, that is, the majority of cases need no treatment; that they are better off without it. Those cases that are evidently at a serious disadvantage should be operated upon. There are more cases of this kind than people think generally. In Minneapolis, a city of less than two hundred and fifty thousand inhabitants, I have knowledge of at least twenty-five cases. If there are that many there, there are doubtless many cases all over the county, and the reason that this condition is overlooked is because it is generally believed to be very rare. I had an interesting experience in point two years ago. A young woman, 19 years of age, was sent to me from Iowa to undergo an operation for an abdominal tumor. When she came under my observation I found that she had a double congenital dislocation of the hip, and that the so-called abdominal tumor was the spinal column shoved forward (lordosis) until it touched the anterior abdominal wall. It is needless to say that the patient was not operated upon for an abdominal tumor.

The mechanical treatment is a failure. I am familiar with the methods and with the men who have carried out this treatment carefully and conscientiously, and the case of Buckminster Brown, reported in the literature as the original and successful case of treatment of congenital dislocation of the hip from prolonged extension, relapsed after the good docter passed to the other world. This has been the experience of all men who have treated these cases in that way. They have been very much disappointed, or the good results which they thought they had obtained were eventually failures on account of relapses.

I have no faith in the bloodless reduction method. I was in hopes when that operation was first introduced, that we would be enabled to relieve a good many of these children by a bloodless and safe method, and one that would make it justifiable for us to operate upon all of these cases, because even in the mildest cases no parent likes to see its child limping even if it is not suffering pain. Here is a suspicious point, that no one in this great country has been able to obtain the same brilliant results as the foreign gentleman who originated the operation. Many good, honest men in this country have not secured good results by this method, and even the Italian who invented the operation does not claim that he makes a complete reduction of the bone. It was demonstrated clearly by himself that he did not do this; that he changed one abnormal condition for another one; that instead of allowing the head of the femur to lie upon the dorsum of the ilium, he pulled it down in the neighborhood where the acetabulum should be. Those who have operated on these cases have had a difficult time in finding the acetabulum, and they tell us that it is very difficult, if not impossible, in some cases to make the reduction. Personally, I do not believe that it is done. If I am correct, and I am sure that I am, because I have studied this matter faithfully, there remains only operative treatment. I had the pleasure of meeting Dr. Hoffa in 1892 when he came to this country and talked about his operation. I fought shy of it because it was a capital operation and involved the cutting of many important anatomical structures. The anterior operation, as recommended by Dr. Lord to-day, is not a very grave operative procedure. A man who is capable of doing good surgery can do this operation with safety and propriety. By the word "propriety" I mean he can perform it and should perform it in cases that require operative treatment. I go back to one of my original propositions, that the average case requires no treatment; that such patients are just as well off in the end if you let them alone. Do not put on elevated shoes; do not do anything of the kind; let them learn to walk in their defective way and they will be better off than if you interfere with them. But some of the little ones are so prone to feel pain and suffer that we must do something for their relief.

Just a word or two in reference to the technique. In performing the anterior operation it is astonishing how quickly we can get down upon the capsule of the joint, then cut off the joint ligaments, get the head of the bone loosened, but keep to the inner part of the capsule, follow it down, and

we drop the finger into what should be the acetabulum. If you do not keep track of that from the first you may have to search for a place to make a new acetabulum. Having done this, you can do all that it is necessary to do in the way of making an acetabulum by splitting down with a pair of scissors, and reduction is then easy. My only misfortune in doing this operation—I have not performed it often—has been thrombosis of the veins in one case, which I believe was due to undue pressure from my plaster of Paris dressing. The patient recovered eventually.

DR. LORD (closing the discussion): I want to thank Dr. Moore for his very kind treatment of this subject, and you can readily see that he talks with the stamp of authority. I feel complimented to think that he so nearly agrees with the line of my argument. I realized that my paper was imperfect, and that the literature on the subject is quite voluminous, and I therefore left out a great many of the old-time procedures, and gave scant attention to some of the points which are still under discussion. I aimed to eliminate the dross and tried to bring the paper within the limit of time at my disposal. I quite agree with Dr. Moore, that we are somewhat limited as to the operative cases. As I told you, I have seen nine of these cases, and have operated on but one. I expect to operate on another of these, an infant, nineteen months of age. I laid the gravity of the case before the parents and they decided that they were not prepared to have the child operated upon at this time. An operation like this should not be undertaken unless its full gravity is laid before the parents and the burden of responsibility placed upon them, and then if they are willing to run the chance, we may operate in the favorable cases.

The case I have reported has changed my views quite fully in regard to the gravity of this operation. I was prepared for extreme shock and a serious condition, but was agreeably disappointed. The patient did not seem to suffer any ill consequences from the operation at all, and I shall not hesitate in the future to recommend the operation more often than I have in the past. Much can be done by recommending hygienic management of these patients, particularly the children, to ride the bicycle for instance may favor them a great deal. They should save themselves; they should not become overtired. The parents should be so instructed that overfatigue should not take place. I recall a pitiful case. It seems that the parents had acted on the recommendation of a physician, who said that the only thing to be done was for the child to have plenty of exercise, and the child was encouraged to use the legs all she could, and the consequence is a serious deformity. There is the most distressing muscular weakness, and exercise to excess absolutely serves to aggravate the condition. I think it is incumbent upon us to thoroughly instruct the parents in regard to the management of these cases that they may get through the world with as great ease and as little deformity as possible.

SURGERY IN RELATION TO PERSONS OF ADVANCED AGE.

By MILO B. WARD, M. D.,

KANSAS CITY, MO.,

PROFESSOR OF CLINICAL GYNECOLOOY, UNIVERSITY MEDICAL COLLEGE.

That "old people must die and young people may die" is an axiom as old as time. This generally-accepted dictum has been a controlling factor in the minds of surgeons in giving opinions adverse to surgical operations on people of advanced age who were suffering from conditions which would be considered surgical were the patients younger. This subject has been chosen with the view of obtaining the opinions of the surgeons attending this association, regarding their personal experiences in performing major surgical operations on people of advanced age. If it be true that old people do not, as a rule, survive major surgery, it certainly is wise and just that surgeons should be very guarded in recommending it. If, on the other hand, it is a matter of fact that they bear exceedingly well major surgical operations, then we should have no hesitancy in giving as favorable a prognosis as might be expected under like conditions when the patients are younger.

The first problem to be considered in discussing this question is: What is considered an advanced age? It seems to me that all persons of 60 years are to be included in this class. While it is generally conceded that some persons are still in their prime at the age of 60 years, yet this will not prove true in the majority of instances. The most important factor in forming an opinion regarding the ability of old people to undergo surgical procedures is that persons who have lived to the age of 60 years have, by this proof of vitality, given good reasons for an indefinite expectancy, even though the ordeal which they must undergo is such as might prove fatal to younger patients.

Life is usually dear, and good health much desired by old people, and our mission will not be completed should we fail to recognize their claim to our ability

to aid nature in restoring health and prolonging life. We cannot escape our duty when consulted by old people suffering from curable growths, unless we are of the opinion that they are not fit subjects for surgery. It is, then, the wish of the writer to emphasize what he thinks is the fact in the case, namely, that old people do, as a rule, bear remarkably well major surgical operations, provided, of course, that surgical shock is reduced to the minimum. It is my opinion also that people of advanced age are not easily shocked, and that they will often show less signs of shock under the same treatment than younger patients. When it is a question of great loss of blood they would be more liable to succumb than younger people. If the foregoing statement is tenable, there is given to the surgeon a larger field of usefulness than has been heretofore generally recognized. People of advanced age suffering from tumors and other surgical conditions are frequently advised by their medical attendant that their age contraindicates surgical interference. It is essential, therefore, that we, as surgeons, should disseminate the facts the result of our experience, in order that old people may have the benefit of surgery, if surgery is wise.

My personal experience does not differ, so far as I know, from the experience of other operators, but at the same time I have had a fair number of quite old people under treatment for the removal of large and frequently very complicated tumors, and other diseases which required major surgery, and the results have been as good as I would have expected were the patients younger. If other operators have had a like experience and the general practitioners are universally familiar with this fact, then there is no urgent need for the presentation of this subject on this occasion, neither for any discussion by the association.

It is essential, in calculating the effects of age on surgical results, that age as computed by years is not so important as is the condition of health. For instance, if a patient is 60 years old and has been rather feeble in health for a number of years, and still keeps around without any sudden loss of strength, such a

patient will bear up under severe surgical operations with equal, if not better results than a patient much younger with similar bodily conditions. There seems to be a peculiar and almost surprising immunity to post-surgical complications resulting from operations on old people. There is no doubt in my mind that they possess a kind of immunity quite inexplicable from any standpoint aside from the rule which might be termed the "survival of the fittest," and which results from the toughening process due to many years of severe bodily strain. Perhaps this is not rational, but it seems to me to be the only explanation for the vital tenacity of aged people. Every physician can readily recall persons whose early lives were one continual round of suffering, who, when they had passed the brow of the hill and begun the descent of life toward the valley of old age, became well and often robust. This condition explains, at least in part, the reason for the natural vigor of persons apparently quite feeble and at the same time advanced in years.

Within the last four months I have operated on three patients whose age, conditions, and the results have exemplified the truth of the statements I have presented for your consideration.

CASE I.—September 13, in consultation with Dr. James, of Kansas City, I saw Mr. E., aged 75 years, who was suffering from what had been considered hemorrhage in the bladder with retention of urine. Mr. E. was in extremis. The bladder was distended sufficiently to occupy nearly the entire abdominal cavity. He was informed that, owing to his age and the gravity of his condition, he would probably not recover from the operation. His suffering was so intense that he chose the operation even though no encouragement could be given that he would survive. Chloroform anesthesia was begun simultaneously with the first steps of the operation, and the moment the feeble old man was sufficiently anesthetized to enable us to keep him on the table, the incision was made through the abdominal wall. The bladder was opened and the bloody urine was forced nearly to the ceiling.

The bladder being emptied, it was sutured to the abdominal wall, drainage inserted, and the incision nearly closed. Within four weeks the old man was about the house. Six weeks after the operation he was as well as he had been for years. No young man could have made a more rapid and complete recovery.

CASE II.—Mrs. R., aged 65 years, was seen in consultation with Dr. Lapp, November 5, to obtain my opinion regarding the advisability of removing a large ovarian cyst. Several physicians had advised against removing the tumor on the ground that she could not recover. Although Mrs. R.'s health had begun to fail and there were signs of adhesions, yet I advised an operation and gave a favorable prognosis. The operation was done November 11. There was no trouble encountered in drawing away the fluid, but the posterior and under portions of the sac were adherent to the intestinal mesentery. I have never before seen such adhesions. It seemed impossible to separate the intestines from the tumor wall. Every portion of the adherent mesentery had to be ligated, and then it was not possible to completely control the bleeding. The cavity was packed with iodoformized gauze, sutures introduced and most of them tied. The bleeding was so alarming that I was obliged to redress patient about four hours after the operation and pack in additional gauze. The packing was left in for forty-eight hours and when removed the provisional sutures which had been introduced were tied. There was primary union of the entire line of the incision. The patient sat up on the tenth day, and went to her home in the city just two weeks from the day she entered the hospital. Mrs. R. was to all appearances well when she left the hospital. I have never seen a young woman do so well under similar circumstances. The tumor weighed forty pounds.

CASE III.—Mrs. L., aged 65 years, was seen at her home in a suburb of Kansas City, November 12. She had been nearly an invalid for several years, and at the time I was summoned she was so reduced that it was impossible for her to retain enough food in her stomach to keep a child alive. I found her a very

small and feeble woman. The tumor seemed enormous in comparison to her frail body. She was removed to the university hospital and operated on November 15. The tumor was composed of such a vast aggregation of cysts that it was not possible to empty the sac. The incision was extended sufficiently to enable the removal of the tumor en masse. Every inch of the abdominal peritoneum was adherent to the tumor wall and the separation shocked the patient severely. The cavity was irrigated with salt solution and a copious quantity was left in the peritoneal cavity. The abdomen was closed without drainage. Patient never had any unfavorable symptoms, and went to her home three weeks from date of going to the hospital. The tumor weighed sixty pounds. How could the most robust young woman have made a more rapid and perfect recovery? This woman was the mother of eleven children, which fact of itself would militate against her vitality, and contraindicate the advisability of a serious surgical operation.

The three cases are referred to merely to emphasize the truth of the assertion that frequently patients suffering from similar ailments and under even more favorable conditions are sometimes advised against surgery, and lives are thereby sacrificed when they might be greatly prolonged.

A CASE OF FIBROMA UTERI.

By D. W. BASHAM, M. D.,

NEAL, KAN.

Fibroma of the uterus is so frequently encountered that an ordinary case would fail to elicit sufficient interest to merit a report before so distinguished a body of scientists as this society of surgeons and gynecologists. But, notwithstanding, I hope the case which I desire to mention may not be altogether without interest.

Myoma and fibroma are terms sometimes employed interchangeably to designate one and the same condi-

tion, but as a matter of fact they are two very distinct and widely separated pathologic entities. In myoma the morbid metamorphosis consists in a multiplication of the muscular elements constituting the walls of the uterus. The pathogenesis is intimately associated with the inflammatory infections affecting the uterine tissues. In fibroma there are developed areas of fibrous tissue, which are circumscribed, and whose fibres run in concentric directions, as thread is wound into a ball. These spheriform agglomerations of adventitious substances are encapsulated in the walls of the uterus and may be enucleated therefrom without disturbing the continuity of the fibres of the organ which have been displaced to make way for the growth. The pathogenesis of fibroma uteri is still veiled in obscurity, the most probable conjecture ascribing the cause to a syphilitic taint.

A myoma cannot be enucleated, because, as before stated, it is an homologous formation owing its origin to simple hypertrophic changes in the musculature of the uterus. A fibroma may be easily enucleated, because it is an heterologous formation embedded in the walls of the uterus and whose fibres have no intimate connection with the organ.

Myoma uncomplicated with fibroma is a condition of rare occurrence, but yet it does sometimes occur.

Some of the objects in presenting these remarks and the case which is to follow are to show that there still exist cases which are not only properly treated with an external pedicle but which are infinitely safer and, therefore, better so treated; and that adhesions no matter how feeble, should be ligated and severed with scissors rather than being broken down with the finger-nails and detached by friction with a sponge and then allowed to fall back, oozing in the abdominal cavity.

The cases which are better treated with an extra-peritoneal pedicle are few, because fibromata are no longer allowed to attain the enormous proportions which were sometimes reached when operations were less frequent than at the present day. In view of the

possibility of encountering at any time a case for the extra-peritoneal stump it would be well to bestow a like amount of care in mastering the technique of the operation as has already been devoted to the perfection of the supra-vaginal and complete operations. I hope this may not be understood as an argument for the general or even very frequent employment of the extra-abdominal method of managing the pedicle. I believe that it is wise to endeavor to be master of every available resource and that it is not a good plan to be confined to any single manner of procedure.

The cases most amenable to the old external method of disposing of the pedicle are, generally speaking, the very serious and most advanced cases, where the patient has become very anemic and cannot bear the loss of blood, prolonged anesthesia, nor extensive operative manipulations. Some patients who carry large tumors have subnormal temperatures, and these, too, bear prolonged anesthesia and operation badly. In other cases, again, where much time has been expended in dealing with extensive adhesions to the body of a large tumor, the operation may be considerably abridged by terminating the procedure with an external stump. I beg permission to state again that this antiquated procedure is neither recommended as a measure to be generally chosen, even in the management of large fibromata, nor yet as a mere pis aller in desperate cases, but that it may be followed with infinite advantage to the poor patient in certain conditions.

In order to succeed with the external pedicle, it is necessary to dispose of things in such a manner as to exclude the peritoneal covering of the stump, as well as that of the abdomen, from the necrotic changes which affect the tissues of the stump prior to the deciduation of the rubber ligature or its removal in case it does not fall spontaneously. To accomplish this, I have but a single recommendation to make, which is, simply to circumcise the peritoneum of the stump at a point just below the rubber ligature and push it down with a blunt instrument to the level of the parietal peritoneum, when the two are stitched

together all around the stump, thus excluding the peritoneum from the strangulating grasp of the ligature and consequent sphacelation.

CASE.—Mrs. J., of African descent, aged 28, married 12 years, weight 139 lbs. She has never borne children, nor been pregnant. She gave a history of painful menstruation and of menorrhagia. She was unable to attend to her duties of the household. In fact she had never been very well since her girlhood, and had been cognizant of the existence of a tumor for several years. The growth increased in size slowly until three years ago, since which time it has grown very rapidly. She has been several times confined to bed on account of inflammation, and consequent pain affecting the tumor. These attacks usually followed prolonged work over the wash-board. Defecation was often distressing and certain articles of food gave her colicky pains. Urination was sometimes difficult and attended with suffering. Examination discovered a solid tumor completely filling the abdominal cavity and distending its walls until the skin was tense and glistening. The tumor appeared to consist of two fibromata of extreme density, the line of juncture being distinctly traceable through the walls of the abdomen. On the left side a movable mass the size of the hand was present which could be pushed up between the abdominal parietes and the tumor almost to the umbilicus. This was thought to be an ovarian cyst, with a long pedicle, but turned out at the operation to be a cyst of the omentum. The pelvis was almost completely occupied, and both defecation and urination were considerably interfered with. The temperature taken on several successive days was about 97° F. in the morning and one-half a degree higher during the evening.

The patient was subjected to ten days' preparatory treatment, which consisted in the regulation of the bowels, good nourishment, the administration of peptonate of iron and manganese, and a daily bath followed by rubbing with alcohol, and a daily vaginal douche of a feeble sublimate solution. On the eve of her operation she was shorn of the pubic hair, the

abdomen was scrubbed with green soap, ether, and alcohol, and a sublimate dressing was applied for the night. She was then dressed in a sterile gown, and placed in bed between sterile sheets where she passed a restful night. On the morning of her operation, which was July 26, 1899, she received a high enema which caused her bowels to be thoroughly evacuated. The dressings which she had worn overnight were removed, she was again washed with a one to two thousand solution of corrosive sublimate and redressed with bichlorid gauze. At eleven o'clock she was anesthetized with chloroform and transferred to the operating table. Here the gauze was finally removed from the abdomen and the field was first treated with alcohol and then spirits of turpentine. All four extremities and the thorax had been enveloped in garments especially made to maintain warmth. The incision was now made, which extended almost from the pubis to the xiphoid appendix. The tumor presented white and glistening, when the peritoneum was incised. Upon making an effort to deliver the tumor, a handful of blue veins as large as the little finger protruded over the tumor from the upper angle of the wound. Close examination of this mass of veins revealed mere traces of omental tissue interspersed among the vessels which were firmly implanted in the tumor and through which blood was being returned from the fibroma to the general circulation. The implantation of the omentum had taken place in the sulcus at the juncture of the two larger fibromata composing the major part of the tumor, the omental structure becoming extremely attenuated, and the large veins developing instead. This probably happened during some of the attacks of so-called inflammation to which the patient was so often subjected during the last three years of company with her tumor. Upon ascertaining that the tumor was movable it was seized with a Billroth forcep and lifted up while the abdominal walls were pushed back until the mass slipped through the incision and lay outside. Sterile gauze pads were now packed about the fibroma to prevent the escape of the intestines. The omental

cyst in the left side was now ligated and cut off. Then the veins which had developed in the omental tissue and which were engrafted in the fibroma were ligated with small catgut on the proximal side, and a hemostatic forcep was placed on the distal side, when they were divided with scissors. Where the veins were very large a single one only was included in the ligature, but where they were small, two or more were encircled by the same piece of catgut. The fibroma being thus liberated from the mass of implanted omental veins it was lifted up to discover any further adhesions, when it was found that the appendix and caput coli were firmly adherent to the side of the tumor, as was also the right ovary, which had been carried upward out of place in the abdominal cavity. Many other adhesions less dense existed between the growth and the small intestines. All these adhesions were ligated on one side and clamped on the other and separated with scissors. Where the adhesion was broad and close it was stretched at the expense of tumor peritoneum.

The right ovary being deemed sound enough to leave was separated and allowed to fall back. The left ovary was cystic, and therefore it was amputated. The appendix was allowed to remain, there being no evidence of disease. The growth now being free from adhesions was lifted up so as to stretch out the pedicle, when a sessile fibroma growing from the posterior walls of the uterus and filling the pelvic cavity was disengaged and brought up. A large section of the superior border of the broad ligament on each side was ligated and divided in order to get down to the thin part of the cervix to form a pedicle. The serre nœud was now placed about the pedicle and the tumor was cut off with a heavy pair of scissors. Next two small fibromata were enucleated from the cervix in order to reduce its volume and the transfixion pins were passed through at a point just above where the rubber ligature was to be placed. Having adjusted the rubber ligature, the space in front of the pedicle and broad ligaments was mopped out with a gauze pad and the stump brought into the inferior angle of

the wound. The peritoneum of the stump was now stitched to the parietal peritoneum with a thread of medium-sized catgut. The peritoneum covering the pedicle was next circumcised, pushed down like a cuff to a level with the parietal peritoneum, and a piece of gauze packed in the sulcus to prevent oozing. Then the abdominal cavity was cleansed of clots and the little blood that had been lost, most of which was from the small vessels in the lips of the abdominal wound, which bled a little after the pressure exerted by the tumor had been removed.

The right ovary, which was hanging by a long pedicle, was placed against the anterior walls of the abdomen by the side of the incision and stitched there with catgut. Then two litres of normal salt solution were poured into the peritoneal cavity and allowed to remain. The peritoneum was next closed with a running suture of fine catgut. Silkworm gut sutures were then passed at intervals of three-fourths of an inch and including everything down to the peritoneum and left untied. The muscles and sheaths thereof were then approximated with a medium-sized running catgut suture, occasionally catching up one of the peritoneal stitches with the thread so as to obliterate the dead spaces. Finally the silkworm gut sutures were tied to within an inch or so of the pedicle. The sulcus about the pedicle was now packed with boric acid, and iodoform gauze was wound about beneath the transfixion pins to prevent oozing. Small pads of gauze were placed beneath the ends of the pins to obviate damage to the skin from pressure. The stump was simply powdered with iodoform and the dressing was completed in the ordinary way. The operation was finished in about an hour. The patient was returned to bed in fair condition, with a pulse of about one hundred per minute. She took between two and three drachms of chloroform. She came out of the anesthetic state almost immediately. She suffered somewhat from nausea after several hours, but soon gave encouraging indications that she was one of those patients destined to get well.

On the fifth day the stump was examined and pow-

dered with a mixture of one part iodoform and four parts of tannin. On the seventh day the silkworm gut sutures were removed, the wound having united satisfactorily. There was some little elevation of the bodily temperature from the fifth day to the ninth or tenth, the thermometer registering about 101° F. The stump was dressed daily and treated with disinfectants. On the twentieth day the rubber ligature, not having exfoliated, was removed by cutting away all the darkened tissue of the pedicle with the scissors. The case went rapidly on to recovery but did not leave the hospital until the end of the seventh week.

The most noteworthy features of this case were the implantation of the omental veins and their extraordinary development, the extent and density of the adhesions, and the effect of the tumor over the body heat.

Anesthetist, Dr. A. B. Lewis, of Hamilton, Kansas; assistant, Dr. Lee, of Toronto, Kansas; nurse, Miss Bertha Stark, of my private hospital at Neal, Kansas.

ACUTE OSTEOMYELITIS.—(Syn.) ACUTE INFECTIVE PANOSTEITIS.

By CHARLES C. ALLISON, M. D.

OMAHA, NEB.,

PROFESSOR OF PRINCIPLES AND PRACTICE OF SURGERY, CREIGHTON MEDICAL COLLEGE; SURGEON TO THE PRESBYTERIAN AND DOUGLAS COUNTY HOSPITALS.

In any sudden attack of illness in which acute, deep-seated, lancinating pain in the neighborhood of bone and joint associated with high fever are leading symptoms, especially if the sufferer be young, osteomyelitis should at least be suspected. The reason for this is, that this serious disease is frequently overlooked and its symptoms are interpreted as rheumatic or neurotic in character, and in the more fulminating types, death will ensue before any intelligent therapeutic aid has been employed.

In the development of this disease, two factors are usually associated: First, the condition of the blood is

vulnerable to the development of pyogenic agents, on account of malnutrition, poor hygienic surroundings, or probably from hereditary deficiencies; second, the exciting cause will usually be found to exist in the shape of trauma which acts only as a localizing agent in determining an hyperemia which becomes quickly infected through the mycotic agents which are already circulating in the blood.

This process once started, viz., the infected hyperemia in the medullary portion of the bone in the face of a blood condition which, instead of being bactericidal in its influence over these changes, already invites a determination of the infective agents to this point and encourages their colonization within this vascular bony chamber, wherein the process of inflammation cannot be palliated by swelling and the relief of tension which these symptoms afford, the determination of cells rapidly occlude both the blood-vessels and the sacculated medullary spaces, and the outer pressure produces a rapid infective thrombosis, filling the vessels in acute cases throughout the whole course of the central canal, producing cell death, both by infection and by pressure,—a condition which still further fills the blood with destructive microbic organisms which are ready to attack, not only the surrounding tissues, but the medullary portion of adjacent or of any bony tissue in the body.

Etiology.—Any of the virulent germs of inflammation may be found in the inflamed tissues, or even in the blood; the streptococcus; the bacillus of Eberth, colon bacillus, and the staphylococcus are probably the most frequent infective agents found. A mixed infection, however, is not infrequent, and it is this form that leads to the most destructive changes in the bone and to the most virulent constitutional symptoms. It is true that multiple points of infection involving different bones may develop simultaneously, which would argue against the importance of the traumatic theory as an exciting cause of this disease, and, indeed, this feature is the least important. Certainly this is true in the acute fulminating process, which often leads to death in thirty-six to forty-eight hours.

Pathology.—The destructive changes may first be recognized by the increasing number of leucocytes containing pigment granules associated with an actual extravasation of blood, stasis, with multiple foci of cell destruction and pus accumulations, and a feeble attempt on the part of nature to limit the process by a line of granulation tissue, while these protective cells promptly succumb to the destructive influences of the virulent infection and pressure within this bony cavity.

The pus may be forced by pressure along the entire shaft, or the cancellous layer of the bone may yield and additional evidences of inflammation will appear upon its surface, if the patient has withstood the destructive changes for sufficient time.

The infection is apt to begin near the end of the shaft of the long bones, because the terminal vessels are dilated in their loops near the epiphyseal cartilage. This dilatation and sudden turn in the course of the vessels allows of a retardation in the current of the blood and the opportunity for a deposit of the infective agents at this point.

The process of destruction may be so acute as to destroy the cartilage, separating the diaphysis and invading the joint and superficial tissues, thus causing the suppurative arthritis and cellulitis of a very acute type; and while it is true that the long bones are most vulnerable, it should be remembered that the short bones and even the flat bones may be the seat of a primary acute panosteitis with rapid destruction, involving, in many cases, the entire bone.

Diagnosis.—By far the most practical phase of this trouble is the study of the clinical aspects presented by this form of inflammation; and while it is true that the disease appears in different types, yet its early recognition is highly important, because the mild case may become severe, and the severe cases are always so destructive and dangerous that, unless interpreted early and treated promptly, the termination will usually be unfavorable. Indeed it has been my experience to see one of these cases diagnosed as rheumatism, which, when seen in consultation on the third day,

was so hopeless as to forbid any operative treatment, and a post-mortem revealed pus in four long bones.

I have seen another case on the fifth day of the illness in which the pain had been diagnosed as neurotic in type, in which trephining two long bones revealed an abundance of pus; but the case was so septic that death occurred in a few hours.

I would therefore look upon the early recognition of this disease as being as important as a proper diagnosis in a case of appendicitis or a cholangioitis; for, indeed, in the virulent types, death will be as certain and as rapid as it can be from any other trouble.

As to the symptoms, then, I would lay great stress upon the pain, its severe, boring and throbbing character. It is associated with pronounced muscular spasms in the adjacent parts and attended by a high range of temperature usually amounting to 104 or 105 degrees.

This fever does not intermit, nor does it remit in any marked degree, and these symptoms are associated with pronounced constitutional depression, by a demoralization in which the temperament of the patient seems changed.

The sufferer is afraid of everybody, refusing any examination for the reason that the slightest concussion of the badly inflamed limb adds greatly to the pain.

There is a history of rigor, the secretions are impaired, the skin is dry, there is complete anorexia and the patient is unable to assume any position which affords any degree of rest.

Associated with these severe symptoms there may be practically no swelling, no redness, and no local evidences except the excruciating pain indicative of the destructive changes that are going on within the bone.

It is true that many cases do not present such exaggerated symptoms and the disease is then recognized by the location of the pain, the continuous type of fever, and the local manifestations, viz., redness and swelling, which are important diagnostic symptoms in the subacute forms of this disease, while in

the acute destructive type, already described, these symptoms are not prominent, simply because the destruction takes the course of least resistance, viz., along the medulla and into the circulating channels.

The fact that this disease has been mistaken for typhoid fever, rheumatism, growing pains, and hysteria, is an evidence that its recognition is not always easy, and it is a stronger evidence that more attention should be paid to the study of the symptoms than has hitherto been done, in that it is so destructive that life may be lost in thirty-six to forty-eight hours unless appropriate treatment has been employed from the very beginning.

The disease with which it is most apt to be found is rheumatism. In rheumatism the pain is not so excruciating as a rule, and the distress is referable to the joint with great tenderness over the articulation, while in osteomyelitis the greatest early tenderness will usually be found near the end of the long bone.

In acute articular rheumatism the swelling appears earlier and the fever does not attain such a high degree. It is more remittent in character and the constitutional symptoms are less pronounced. Rheumatism, furthermore, is usually polyarticular, and while osteomyelitis may affect different bones, the number of inflammatory points may usually be said to be less than is the case in acute rheumatism.

We would feel, therefore, that the cardinal symptoms are the severe character of the pain, associated with high continuous fever and tenderness near the end of the long bone in a demoralized patient with, as a rule, a history of rapid growth in one whose blood condition and surroundings may reasonably be said to be poor.

Treatment.—The treatment which should be employed in any acute case is operative and it should be undertaken as soon as the diagnosis is made. In appendicitis or an acute inflammation involving the gall-bladder this advice has been given, but it is now questioned and even rejected by the best surgeons, in that it cannot apply to every case. But in acute

infective osteomyelitis there can be no exception to this rule so long as the patient is not moribund.

We have in this disease an hematogenic infection which increases under the influence of pressure in something like a geometrical progression, until the system succumbs to the poisoned circulation. Therefore, an incision with trephination of the bone should be done at the earliest possible moment, drainage established, and strong antiseptics used to impede as far as possible the destructive process already started. Should there be points of tenderness over more than one long bone, each should be trephined and treated energetically with a view to establishing drainage at every point where pressure and cell death are found.

In any case of extensive destruction of the shaft of a bone with sloughing of the periosteum, two methods may be suggested: First, the removal of all the diseased tissue and of all the necrosed bone, that is to say, the accomplishment of a radical operation; and second, of opening the medullary canal and establishing drainage, disinfecting with strong antiseptics, and assisting nature in the reparative process.

The rule which should guide us in deciding upon the operative plan will depend upon the condition of the patient and upon the bone involved.

If the condition of the patient should warrant a radical operation and the destruction of the bone would seem so complete as to offer no prospects of being regained by nature, then the radical operation may be recommended; on the other hand, it is better, as a rule, to do the less extensive operation in case a long bone is involved, especially if this be the femur or the humerus, as they have no collateral support.

The operative steps, disinfection and the removal of necrotic tissue, should be supplemented by the immobilization of the part, by a clean surgical dressing, which encourages drainage in the greatest degree (and this the moist), and by general supportive measures, with a view of sustaining the heart during the acute depressing stage of this trouble.

The early recognition of this disease will render amputation unnecessary in practically every case; yet with the process involving first the shaft of a long bone, and second epiphysis, and third the joint proper, there may be so much loss of tissue and erosion of the ends of the bones as to render the member practically useless and amputation may be necessary.

The management of the secondary complications, viz., the localized bone abscess, necrosis, and sequestra, are unimportant, in that there is no actual danger associated with their symptoms, and their removal may be easily accomplished.

DISCUSSION.

DR. B. B. DAVIS, of Omaha, Neb.: I feel that a paper of this kind should not go without discussion. The doctor has given us the main points in regard to this disease and his paper is in line with what I think is the view of most of us. The diagnosis should be made promptly, and operative treatment should not be delayed.

I have been impressed in my experience with one particular thing as a causative factor in osteomyelitis, although it may have been merely a coincidence. I refer to lowered vital resistance, which seems to have something to do with it. I have had three or four cases of acute infectious osteomyelitis in boys who had been in bathing for days consecutively from morning till night. The osteomyelitis came on immediately after indulging in bathing, but whether there was any trauma connected with these cases I do not know. There was lowered vital resistance, and it might have had something to do in causing the affection.

With reference to the diagnosis, I suppose that all of us have seen many cases that have been called rheumatism and treated as such for days, weeks, and sometimes months, and I am free to confess that I have fallen into this error myself, particularly one case in the second year of my practice. With increased experience and additional knowledge, I know positively that they were cases of acute infectious osteomyelitis of the femur toward the upper extremity. I called it rheumatism. One patient had a temperature that was very high, lived three days, and died. There is no question in my mind now but what it was a case of acute infectious osteomyelitis, and I believe that early operative treatment might have saved him. We frequently meet with cases that come into hospitals that have been called rheumatism, and anti-rheumatic treatment has been of no avail.

In regard to the operation for osteomyelitis, I do not know that I understand the doctor correctly, but I believe he spoke of trephining the bone. Undoubtedly trephining the bone is a good thing, but I feel that more radical work should be done in such cases with the chisel where the

long bone is involved. In such cases I make a trough of the bone from one extremity to the other, in order to get all of the infected portion of the bone thoroughly drained. Of course, we might be able to thoroughly drain it without this radical procedure, but still, it seems to me, it is good treatment, and we are the more likely to arrest the progress of the disease.

DR. JAMES E. MOORE, of Minneapolis, Minn.: This is a timely topic. I think we all agree that the diagnosis should be made early, and that treatment should be heroic. In other words, it should be conservative, cutting the diseased area wide open. At the present time, I do not think any man is excusable for calling a case of osteomyelitis rheumatism, yet it is done. Not a month passes but what a case of osteomyelitis, when it comes under my care, has been diagnosed and treated as rheumatism by the general practitioner. It is a disgrace to the profession of the present day. It is true we were guilty of these errors years ago, at which time we were excusable because we had not been taught properly. We did not know what osteomyelitis was. When there was trouble with bone or bones, we were taught it was periostitis. It took all the moral stamina I had to perform my first thorough operation for osteomyelitis, because, while I had been told by competent men that these suppurative affections always began in the medullary cavity, I had scarcely the courage to go deliberately down through the periosteum which at that time was bathed in pus, and which I had been taught was the seat of the disease, and to go into what I feared might be a healthy medullary cavity. But I have done it a good many times since, and I have never found a healthy medullary cavity. It takes but little observation, in my opinion, to make a differential diagnosis between rheumatism and osteomyelitis. In rheumatism the swelling begins in the joint; there is sensitiveness of the joint, and if the patient be a child, a little careful manipulation of the limb will enable you to gain his confidence. Pressure with the joint of the finger will elicit the fact that there is a sore spot at the end of the diaphysis, just above the epiphyseal line. Having located the sore spot, after a slight operation, you will soon get the patient well.

DR. M. L. HARRIS, of Chicago, Ill.: I dislike to speak so frequently; however, I wish to say a word or two in regard to acute osteomyelitis. In these cases we all agree that the diagnosis should be made early. One of the best diagnostic points in connection with osteomyelitis is the leucocytosis. It is a simple matter to count the leucocytes of the blood; it can be done by anyone in a few minutes. Many of the cases which have been mistaken for typhoid can be diagnosticated by means of the blood-count. In an acute infectious osteomyelitis we invariably have from the start leucocytosis. In typhoid we do not have it. In many of the infectious diseases we do not have it; but just as soon as we get an increase in the leucocytes, say to about twenty thousand, we should look at once for the point of infection. It is a diagnostic point which very rarely fails, and we should never omit it in any case of a

sick child or an adult in which the diagnosis is not clear. Always take a blood-count; if you find leucocytosis, there is infection. Look for it and you will find it.

DR. ALLISON (closing the discussion): The incentive I had in writing this paper was seeing a boy with a temperature of 104° for four days, and I was called to see the case by an intelligent physician, who gave me a history of the case, from which I concluded that my colleague had overlooked the important diagnostic features of this disease, namely, localized pain in the bone, associated with a high fever which did not remit.

As to the finishing-up process of the operation, I am glad that Dr. Davis alluded to the importance of making a veritable trough of the bone; that is the proper way to do, and I believe it is the usual method.

WHAT SHOULD BE OUR TREATMENT OF FRACTURES OF THE ANATOMICAL NECK OF THE HUMERUS COMPLICATED BY A DISLOCATION OF THE HEAD?

BY W. JEPSON, B. S., M. D., L. R. C. S. (ED.),

SIOUX CITY, IA.,

PROFESSOR OF SURGERY AND CLINICAL SURGERY, SIOUX CITY COLLEGE OF MEDICINE.

There has recently come under my professional care a patient, a man, Mr. G. P., aged 48, quite muscular, and weighing about 180 pounds, who was, on the evening of September 30, 1899, while standing on the street, suddenly thrown to the pavement by a passing carriage, but owing to a slight intoxication he was unable to subsequently explain in what manner he fell, or whether the violence was direct or indirect. He was removed to an adjacent hotel, where he was seen by Dr. F. J. Murphy, who recognized the existence of an unusual injury at the shoulder, which he deemed to consist of a fracture of the neck of the humerus, with a subclavicular dislocation of the head. I was requested by him to see the patient with him the following morning, when, after an examination, I concurred in the diagnosis. The following phenomena were elicited: Marked preternatural mobility at the joint; shortening, which could be increased or diminished at will; no increase of diameter of

shoulder; flattening of shoulder upon extension, which flattening was obliterated by pushing the humerus up in apposition to glenoid cavity; the greater tuberosity could be distinctly felt in its normal relation to the humerus; no distinct crepitus could be elicited; internal to the coracoid process, and underneath the major pectoral muscle, a globular mass (or rather half of a globe), which as to size corresponded with that which the head of the humerus could be expected to have. It was susceptible of being moved and partly tilted on edge. My diagnosis was that of a fracture of the humerus through its anatomical neck, with dislocation of the head. The examination was conducted under anesthesia, as the patient would not tolerate any examination without it. By no amount of manipulation could I bring the dislocated head into relationship with the presumed rent in the capsule, much less reduce it. I expressed it as my opinion that the appropriate treatment would consist in removing the head of the bone, in place of attempting its reduction. This view was based on the following reasons:

1. The fracture having been through the anatomic neck, thus being entirely within the capsule, and as a consequence it could have no remaining source of blood supply. That the head was cut off from all sources of nourishment, except by imbibition, was further rendered probable by the present location of the same,—the only source of error being the possibility of the fracture not being strictly through the anatomic neck, but involving sufficient of the shaft so that part of the capsular ligament was yet adherent to the head.

2. If the dislocated fragment had no source of blood supply, as presumed, then if returned, it would in all probability suffer necrosis and act as a foreign body in the joint, requiring its subsequent removal.

3. If left in its present position, it would probably suffer the same fate as if returned to its normal position; and even if it did not, the serious results liable to follow from injury to the brachial plexus from the

inflammatory exudates which might be expected, further confirmed me in this view.

It was therefore decided to expose the head of the bone, and if it was found to possess no adequate source of blood supply, to remove it, while, if it had any portion of the capsule adherent to it which was sufficient to nourish it, an attempt would be made to return it to its normal position. The patient was accordingly transferred to the St. Joseph's Hospital, where on the following day these views were carried out.

An incision was made internal to the coracoid process and an inch below the clavicle, severing all the structures down to the pectoralis major, after which the fibers of the clavicular were separated from the sterno-costal portion and held aside with retractors. The exposed head, which was found to lie with its articular surface forward, was possessed of no attachments whatever; hence no attempts were made to replace it,—instead, it was removed, for reasons already given. The recovery was uneventful, and the patient was using the arm before the lapse of three weeks. Motion at the shoulder is good, and the functions of the arm seemingly not materially disturbed.

Permit me now to ask you whether the treatment employed in this case was proper, and justified upon anatomical and pathological grounds; if not, what treatment should have been employed? That the close of the nineteenth century should find this question unsettled to a degree which would warrant one in thus interrogating you seems remarkable; yet that I am justified in this I believe will be conceded after a perusal of the literature extant on the subject, a brief resume of which I append. That the accident is not of frequent occurrence is evident, for Dr. McBurney, in an exhaustive investigation of the subject of dislocations of the humerus complicated with fracture at or near the surgical neck, was able to ascertain records of only 117 cases, he at the time furnishing the record of an additional case in his own practice, since

which another case in his practice has been added, and one in the practice of Dr. Wyeth, making a total to date of 120 recorded cases. That this condition when existing has at all times been recognized, or when recognized has always been reported, is not presumed however. Of these 120 cases, the course of the line of fracture was through the surgical neck in 71 cases, through the anatomical neck in 28 cases, and through both the anatomical and surgical necks in 6 cases. The upper part of the humerus was fractured in 3 cases, while 11 were designated as being at the neck, and 1 was comminuted. In 49 of the cases the dislocation was said to be subcoracoid, 16 subclavicular, 7 subglenoid, 1 subspinous, 11 were called axillary, and in 36 cases no location was given. From the foregoing it will be observed that fracture of the anatomical neck complicating dislocations is the rarest, constituting about 25 per cent. This injury has been attributed to various factors, such as violent blows or falls upon the shoulder, but the opinion which seems to be the most generally accepted is that a dislocation primarily occurs through the usual mechanism, namely, forced abduction, as in a fall upon the elbow or hand, and the force continuing to act breaks the humerus, the glenoid fossa possibly acting as a fulcrum or wedge against which the bone is broken. There seems to be a universality of opinion as to its constituting one of the most serious complications of dislocation at the shoulder, owing to the difficulty of diagnosis which is often presented, which of course may now be minimized by the use of the X-ray; but particularly on account of the obstacles often presented in returning the head to the glenoid cavity and securing its proper relation to the distal fragment. The diagnosis of this injury must generally be based upon a recognition of the absence of the head from the glenoid fossa, as well as its position in an abnormal location, and that movements of the arm fail to be transmitted to it; for such other phenomena as may be presented, such as the existence or absence of crepitus and preternatural mobility, may easily be interpreted as indicative of other lesions.

Aside from the pathognomonic symptoms above mentioned, there was present, in the case I reported, a series of symptoms which I considered as directly confirmative of the condition. They were the following: Flattening of the shoulder when extension of the arm was made, which flattening could easily be obliterated by pushing the upper end of the humerus up against the deltoid; but this gave rise to shortening without the presence of crepitus, a phenomenon which could not well exist in fracture without dislocation or dislocation without fracture.

It is the treatment of these injuries, however, that has elicited the greatest degree of consideration at the hands of writers upon surgical topics, and while there exists much diversity of opinion as to methods to be employed, yet there seems to be a unanimity of opinion to the effect that the dislocation should be reduced at once if possible, for the lapse of time not only increases the difficulties of reducing the dislocated head, but also of properly treating the fracture; for with the proximal fragment in an abnormal position it is to be presumed that union with the shaft could but rarely occur in a correct position. However, this method of treatment was made use of in some of the earlier recorded cases where it was found impossible to return the dislocated head, and, after union had taken place, an effort was made to reduce the dislocation; but of the ten cases where this plan of treatment was employed, in only three cases is success reported to have followed the effort at reduction, and in these there may be some question as to the degree of success attained. In the other seven cases reduction could not be accomplished. This method, therefore, has little to commend it as an appropriate procedure, and is mentioned by modern surgeons only to be condemned. Immediate reduction of the dislocated fragment is the most suitable method, but it presents many obstacles not encountered in an ordinary dislocation, as it is impossible to communicate to the dislocated head any movements or traction through the medium of the arm unless the fragments

should be impacted or the untorn periosteum should maintain a bond of union between the fragments. Stimson reports two cases of fracture of the anatomical neck (I question the correctness of this, as in a fracture of the anatomical neck sufficient periosteum would not exist to form a bond of union) where the untorn periosteum was utilized in reducing the head, by making traction upon the fully abducted arm and firm pressure directly upon the dislocated head applied by the fingers, the patient being anesthetized. Where no such bonds of union exist, the procedure which is most favorably considered by authors of recent years is that of impulsion of the dislocated fragment back into its normal position by means of direct pressure upon and manipulation of the fragment with the thumb and fingers; if the patient is anesthetized, the fragment favorably located, and the rent in the capsule adequate, successful reduction may seemingly be expected in a fair proportion of cases. In eighty-one cases, where attempts at reduction were made within a reasonable time after the accident by the last mentioned plan, or slight modifications of the same, reduction was secured in thirty-six cases, and in forty-five cases the efforts were unsuccessful. Death ensued in six of these cases, as a result of the more or less violent attempts made to induce a reduction. To overcome these difficulties in reduction, Dr. McBurney in 1893 devised a method which seems to have much to commend it, and is mentioned by all recent authors upon surgical subjects in the most commendatory terms. However, I learn of its employment in only five instances, four of them in the hands of the inventor, with perfect success,—two cases being a fracture through the surgical neck, and the other two through the anatomical neck. The other instance in which this plan was used was in the hands of Dr. Wyeth, where a fracture was supposed to have occurred in an old dislocation, to which factor is attributed the lack of a successful result. The method as described by Dr. Wyeth is as follows: "An incision should be made through the soft parts on the outer

aspect of the upper fragment down to the bone; a hole drilled in the bone, a stout hook inserted, and direct traction made upon the upper fragment in the proper direction until the dislocation is reduced; the wound closed, and immobilization of fragments secured through the medium of a plaster dressing."

Aside from the foregoing methods, two others have been employed in the cases so far reported: First, the method known as Riberi's, which consists in attempting to establish a false joint, by persistent passive motion undertaken from the first. The method has been made use of in such instances where reduction of the dislocation was not secured. Seven cases are reported to have been treated in this manner, and all are stated to have obtained functional use of the arm after periods varying from six months to four years. No statement is made as to the disturbances, if any, which resulted from the retention of the head in its abnormal position. The second method was where the dislocated head was either removed immediately, or later after an arthrotomy. I only learn of its being employed in six cases, and no account is given of the result; but it would seem that the functions of the arm should be fair, for certainly as good an opportunity for such a result exists here as in the instance of an exsection at the shoulder joint.

From the foregoing resume of the subject it will be observed that all dislocations at the shoulder joint are classified as occurring either at the anatomical neck or the surgical neck, and that they are all presumed to be amenable to the same treatment, namely, that reduction of the dislocated head should be sought for, irrespective of the line of fracture. This to me does not seem proper, for I am inclined to the view that there is a marked difference in the pathology of the two lesions, which is of such vital importance that it must determine which is the appropriate plan of treatment. Thus, if we have a fracture strictly within the anatomical neck, the head will be severed from all blood supply (Dennis, McLachlan, Erickson, Roberts) and is consequently liable to undergo necrosis, and it would not unite with the shaft even if brought

into apposition to it, unless it was impacted, but would act as a foreign body in the joint. On the other hand, if the line of fracture exists through any part of the bone between the anatomical and surgical necks, including the latter, the upper fragment may retain a source of nourishment through the muscles attached to the tuberosities, as well as the untorn portion of the capsule, adequate to maintain vitality; therefore, such may unite to the shaft when returned to its normal position. Consequently I would formulate the following as to treatment, based upon the correctness of the foregoing: In fractures through the anatomic neck, with fragment separated from all blood supply, the proper procedure is to remove the dislocated head of the bone at as early a period as may be justified by circumstances, and that passive motion be undertaken early with a view of securing a neoarthrosis, for if the bone were returned it would not unite and would ultimately have to be removed, and if left in its abnormal position it would in all probability induce deleterious effects. On the other hand, if the fragment has adequate blood supply (as is possible in a fracture involving the tuberosities or the surgical neck), every effort at reduction should be made by direct manipulation, while the patient is under an anesthetic. If this should fail, then McBurney's method may be called into requisition. When it is impossible to bring about reduction of the upper fragment, then it would appear to me that removal of the fragment would lead to results superior to those which would follow in event of its being left in situ.

DISCUSSION.

DR. JAMES E. MOORE, of Minneapolis, Minn.: I should dislike very much to see this excellent paper go undiscussed. I heartily endorse the conclusions arrived at by the essayist, and think that in those cases in which it is necessary to make an incision, there is no better way than to follow the suggestion of Dr. McBurney. I had referred to my clinic not long since a large, fleshy man who, it was said, had sustained a fracture of the surgical neck. I read up on McBurney's operation and made arrangements to perform it. I had some difficulty in getting tools, but finally found a hard-wood drill and a hook used by shoemakers to pull the last out of a boot which would have answered very well.

After the patient was anesthetized, however, I found that he had a fracture of the neck of the scapula, so that I was disappointed in performing a nice operation.

DR. THOMAS J. MAXWELL, of Keokuk, Ia.: This paper is important and extremely interesting to those who practice general surgery. Fractures of the anatomical neck of the humerus are very seldom seen or treated, and the treatment in the case of Dr. Jepson I think was in every way eminently proper. As to the absolute necessity of removing it from its abnormal position under the coracoid process, is a question. I remember reading the case of Dr. Agnew many years ago in which he attempted to reduce an old dislocation in an elderly lady and fractured the humerus about the surgical neck, and failing to restore the bone in its entirety, he placed the fractured end of the bone back in apposition with the glenoid cavity, leaving the fractured fragment in its abnormal position. His advice was that if the fragment produced pressure or caused any trouble upon the brachial plexus it should be removed. The old lady recovered good use of the arm, and the result was entirely satisfactory. We know that in resections of the head of the humerus, as a rule, the results are satisfactory as to motion of the arm, so that I question whether it is really necessary to remove this fragment of bone in every case, believing that it would undergo gradual absorption, perhaps become encapsuled, and remain there without giving any special trouble. There is no objection to its removal by operation especially, if it cause pressure upon the brachial plexus or some important parts that would give pain or interfere with the circulation of blood in the arm. I commend the paper, and I think it is a very valuable contribution to the transactions of our association.

DR. C. H. MAYO, of Rochester, Minn.: I have had two cases of fracture of the anatomical neck of the humerus, one in a child 10 years of age, operated on a week after the injury; another in a boy, 13 years of age, operated on two weeks after the injury, both by the open incision. I found that the fracture slanted through the surgical neck. With a small bradawl I bored an opening into the head of the bone at the margin of the articulating surface. I then took a Hagedorn needle, inserted it through the head of the bone, thus attaching it to the shaft of the humerus. I then ran a silkworm-gut suture through the eye of the needle, and the suture was allowed to remain for three weeks. A large gauze drain was inserted at the point of fracture lower down by making a slight incision. At the end of three weeks, fixation being maintained by plaster of Paris, the needle was withdrawn. The same procedure was adopted in both cases and the results were excellent.

DR. JEPSON (closing the discussion): There is one point which I may have failed to make clear in my paper, and it is this: If we use the present nomenclature, we should consider the fact as to whether the proximal fragment has an adequate blood supply or not. If it has not, then it should be removed at the time the attempt is being made, as Dr. Moore has stated, in following McBurney's method. On the other hand, if there is an adequate blood supply, every effort should be made to return the bone to its normal

position. The literature upon the subject is not clear as to that; in fact, statements are made by eight or ten surgeons to the effect that if we have a fracture of the anatomical neck of the humerus the patient will die. McBurney says he has had one instance of fracture of the anatomical neck and has returned the bone to its normal position, and when it grew together it was perfect. Another surgeon reduced two fractures of the anatomical neck with dislocation where the periosteum was not sufficiently broken but that it could be returned. In view of the fact that we are going to have facilities at our command for making a diagnosis in these cases through the medium of the X-ray, this subject will become more important to us in the future than it has in the past.

HEMATOMA OF THE VULVA AND VAGINA.

By A. L. WRIGHT, M. D.,

CARROLL IA.

The old writers treated of this subject under the head of thrombus of these parts. Of late, however, the pathological conditions have been treated as hematocele, if the hemorrhage was from one of the deeper vaginal vessels and within the pelvis, or hematoma, if the swelling commenced in one or both labia. Thrombus is rather loosely applied to the hemorrhage either in the vagina or vulva. As will be shown later, the pathology is that of a hemorrhage into the cellular tissue of the vulva or vagina and surrounding structures, consequently is not a true thrombus. It has been suggested that the term be restricted to those cases of vulvo-vaginal hematoma where the hemorrhage is of venous origin and not due to arterial rupture.

Prior to the halcyon days of clean midwifery all the dystocia that crossed the pathway of the lying-in woman was attended with much danger. The subtile enemy lurked in ambush and sought in darkness to entrap the precious life of its victim, or to compromise the mother's future well-being, by leaving the stamp of dread disease upon her, thereby blighting her fondest hopes, and relegating to the doubtful care of others the tender life of the new born.

Since the light of dawn first began to appear in the

far east, shedding its illuminating rays throughout the universe, constantly growing brighter and brighter, gradually penetrating every nook and corner, first one and then another of the various branches of our noble science until, at the present time, there is not a disease to which flesh is heir that has not felt its beneficent influence. The subject under consideration was attended by a frightful mortality during the dark period before dawn. In a monograph published by Deneux, he reports sixty-two cases of thrombus of the vulva, twenty-two of the number dying. This mortality seems excessive, as Winckel met with but six deaths in fifty cases and Fordyce Barker two deaths in thirty cases. Johnson and Sinclair encountered two deaths in seven cases in the Dublin lying-in hospital. Scanzoni had but one death in fifteen cases. Perret, on the other hand, in an analysis of forty-three cases reports seventeen deaths. No doubt some of these were due to other causes than that ascribed, as in some instances the patients dying were reported as having some other complication, as puerperal fever.

The possible influence of the thrombus as a port of entry for the admission of the pathogenic organisms must not be overlooked when we encounter this condition. Though not of frequent occurrence it is met with sufficiently often to merit consideration at our hands. In over 6,000 deliveries reported by Deneux, Dubois, and others, the accident was met with but eight times. American authors and Winckel are of the opinion that it occurs once in 1,600 deliveries, basing their conclusions on 50,000 confinements, while Wenning thinks it occurs once in 2,000 times. The frequency of its occurrence is very difficult to estimate and of little consequence; men of large experience have never met with a case, whereas after many years they encounter a bunch of them in a short space of time.

During an experience of twenty-five years, the greater part of that time engaged as general practitioner, meeting with a goodly share of the neighborhood obstetrical work, I have never met with this ac-

cident in my own practice. Since devoting my time largely to surgical work, I have encountered four cases, two of the number coming under my observation during the past year. In discussing the dystocia with some of my confreres—many of them doing a large obstetrical work—they inform me that they have never encountered this accident; in fact, they have expressed surprise that the accident may occur to the lying-in woman. This leads me to the belief that hematoma of the vulva and vagina is of exceedingly rare occurrence, even more so among our rural people than in cities. It is a source of great pain to the patient, alarm to the attending accoucheur, and not infrequently the cause of much embarrassment, the exact pathological condition not being recognized, or mistaken for some other condition. In one case coming under my observation, the attending physicians believing that the woman had some unusual form of hernia, had made prolonged efforts at reduction, by taxis, but in spite of their efforts the tumor had continued to increase in size, until the coagulated blood removed some hours later would fill a two-quart pail.

The tumefaction, when in the vagina and occurring before delivery, has been mistaken for some part of the presenting fetus, although Perret states that in an analysis of all the published cases at his command he cannot find an instance where this error was made.

Barker, on the other hand, reports one case mistaken for the fetal head and another for placenta previa. In one case I met with during the past summer the attending physician stated that he had at first mistaken the intra-vaginal swelling for the head of a second child, believing he had a twin pregnancy. He discovered the error very soon, but was not able to determine the exact nature of the dystocia. Were it not for the frequency with which the mucous membrane and the perineal body in the primipara tears, hematoma would be met with much more often. The laceration permits the blood to escape instead of accumulate in the cellular tissue of the surrounding parts.

While we can readily conceive of a hematoma of the vulva and vagina as a result of a trauma inflicted to these parts in the unimpregnated woman, this causal relation must certainly be very rare, although Velpeau states that it is more frequent in the non-gravid condition than during pregnancy. This does not, however, correspond with the experience of others. The hemorrhage is almost always met with during the later months of pregnancy or during delivery. Then we are safe, I take it, in assuming pregnancy the most important etiological factor predisposing to the accident, due to its effect upon the blood-vessels, producing as it does more or less local stasis.

The influence of the gravid uterus upon the return circulation from the lower extremities is such as to make it a far more dangerous accident to the pregnant than the non-pregnant woman.

The influence of the varicosed condition of the veins is problematical, as broken down veins on the labia and extending into the vagina are quite frequently met with in the pregnant woman and rarely giving rise to trouble. The entire absence of the varied condition of the veins has oftener been noted in hematoma than their presence. Barker argues that a varicosed condition of the vein is in favor of the woman escaping this accident. A greater predisposing cause I believe to be exerted by the chemically changed composition of the blood current itself, upon the nutrition of the tunics of the blood-vessels. It is a well known fact that the blood of the pregnant woman contains abnormal constituents and toxins not found there at other times. The influence of this foreign matter upon the nutrition of the locally engorged blood-vessels certainly must be deleterious.

The influence of syphilis upon the blood-vessels, producing as it does an endarteriitis, thereby rendering them more easily ruptured under strain, no doubt contributes more frequently in a causal relation among the inhabitants of our cities than in the rural districts, owing to the fact that syphilis prevails to a greater extent in our cities than in the country. The same

may be said of atheroma; while it is, as a rule, an affection of the larger arteries and advanced age, under the stimulating influence of alcohol, and other forms of vice, it may attack the smaller arteries and produce areas of degeneration in their coats that will give way during delivery. A disparity in the diameters of the pelvis and the child's head may also act as a contributing cause. The mother, making excessive efforts to overcome the resistance offered to the passage of the large head, exerts herself to the utmost. Faulty presentation, the manipulation of the accoucheur to correct the same, have no doubt more than once contributed to the formation of a hematoma. The same may be said, also, regarding the use of forceps.

The most frequent determining cause is parturition itself. It is rarely met with during the early months of gestation, but when encountered at this time is due to local violence, as excesses in sexual intercourse, during a drunken debauch, or to blows and falls upon the parts. (The same is true of the non-pregnant woman.) I am skeptical regarding emotional causes alone. We can readily understand how the gravid uterus can so interfere with the return circulation as to cause an atheromatous vessel, or one already undergoing degenerative changes due to syphilis, to give way under pressue of the same, but this must be very rare. During labor, however, there are many influences operating. The labor is generally very severe and greatly prolonged. The mother exerting herself to the utmost to deliver her child, necessarily greatly increases the engorgement. If the integrity of a blood-vessel has suffered in any way, by reason of faulty nutrition or pre-existing disease, the already overdistended vessel will give way, or the long-continued delay of the head in the pelvis may produce sufficient pressure to cause necrosis of the vessel tunics, so that the hematocele does not form for some hours or days after delivery. Helfer reports a case coming under his observation where the formation of the hematoma did not take place until the twenty-first day after delivery.

The rapidity with which the tumor forms will aid us in determining whether the ruptured vessel is an artery or a vein. The rupture of a large vein would prove an exception, however. It is a well-known fact that a vein may be ruptured during the passage of the head through the pelvis, but owing to the pressure of the former against the pelvic wall hemorrhage does not take place until after delivery, and not then unless the rent in the vessel is free. The tear may be occluded by a small clot, that prevents the escape of blood, until it is dislodged by some violent exertion on the part of the patient, as in coughing or raising herself up in bed.

The veins are more frequently ruptured than the arteries. This fact no doubt is what gave rise to the impression that formerly existed, that a varicosed condition of the veins was a necessarily predisposing cause of hematoma. In one case encountered during the past year the tumor was due to the rupture of one of the deep branches of the internal pudic artery that supplies the deep structures of the vulva. This was secured and all hemorrhage stopped. A careful examination revealed the fact that the veins of the parts were not varicosed.

The first manifestation that is complained of is pain, the intensity depending on the close proximity of the hematoma to the clitoris and the size of the same; it is due to pressure on the nerve filaments in the parts. Dr. Barker reports having seen one case where the patient declared that she had absolutely no pain, although the labia was greatly distended. The pain radiates down the inner aspect of the thighs, over the abdomen and into the back. The last case I saw complained of the pain in her back only. The distress from the pressure of the effused blood upon the rectum and bladder is very marked if the hemorrhage is diffused through the pelvis, or retention may be a prominent symptom if the tumor is large enough to exert pressure on the urethra. On examination a round globular tumor is discovered, producing an enormous swelling on one or both sides of the in-

troitus extending into the vagina. If the tumor appear in the vagina, before delivery of the child, it is claimed it may offer considerable obstruction to the advance of the same, and require prompt interference.

The hemorrhage is sometimes so severe as to fill the entire pelvis, overflow into the abdominal cavity, or extend over the thighs and abdomen. Cazeaux reports a case where the hemorrhage was so great as to lift the peritoneal folds of the broad ligament wide apart, producing extensive retroperitoneal extravasation and infiltration. To the touch the tumor is a smooth globular mass, unless it is diffused, imparting an elastic sensation, easily recognized, and ought to give rise to little difficulty in diagnosing. If open to inspection, the tissue over the swelling presents a dark mottled or mahogany appearance. The first indication that may attract attention is the blanched appearance and constant restlessness incident to the loss of a large quantitly of blood; and examination reveals the gravity of the situation, which may be greatly increased by a grave internal hemorrhage; the relative gravity of the case depends upon the loss of blood.

The tumor varies in size, from the merest extravasation to a cocoanut. It usually assumes a dark livid appearance, and if accessible ought not to be mistaken for anything else.

The practical application to obstetrics, of the principles of asepsis and antisepsis, that underlies all surgical work today, has brought about an entirely different result attending the accidents occurring in the lying-in chamber. Pasteur's discovery of the laws governing fermentation has as completely revolutionized medicine as the discovery of the law of gravitation by Sir Isaac Newton has changed the physical laws governing the universe. Lister first took advantage of Pasteur's work and put into practical application the principles underlying the thoroughly clean surgical work of today. These principles were soon applied to obstetrics, with the result that now the fatalities from septic infection following delivery

are reduced to the minimum and we never hear of such a mortality as reported by Deneux, of 21 children and 22 mothers dying from hematoma in 62 deliveries; or, as reported by Perret, of 17 deaths in 43 confinements. Death rarely occurs at the present time, except it is due directly to the enormous loss of blood.

If the blood clot is not large it will be quickly absorbed, otherwise it will become infected, suppurate, and then be discharged, unless opened up and emptied out by the attendant. The entire mass may become gangrenous and slough away. If the ruptured vessel is well within the vagina and the mucous membrane gives way in advance of the descending head, the hemorrhage may be frightful and prove fatal to both mother and child. The prognosis will depend upon the period of gestation at which it appears, the size of the tumor, its location, the extent of the hemorrhage that is concealed and beyond a superficial inspection, as well as the treatment inaugurated. Care should be exercised in examining a case of suspected hemorrhage of this kind, that the overflow is not into the abdominal cavity. Such being the case the gravity is greatly increased, and will require the most careful management to avert a fatal termination. Prior to the two last decades the mortality was much greater than since the introduction of antiseptic methods into our obstetrical work.

From my own experience I am convinced that it is not a time for tentative measures. The attending accoucheur must be clean and act promptly, otherwise the mortality will increase. As has been pointed out elsewhere, the hematoma appearing before delivery is very rare and not attended with much danger. But if the tumor appears in the vagina in advance of the head the mortality to both mother and child is very great. The treatment to be pursued will depend upon the size and location of the tumor, as well as the date of its appearance. Small hematomata giving rise to little suffering may be treated expectantly, with the hope that nature will dispose of the same. In leaving the tumor to be absorbed, the fact must not be over-

looked that the danger of infection is great and may seriously compromise the patient. The tumor appearing in the vagina in advance of the head calls for the most careful consideration. If the blood is escaping into the abdomen, and you are certain the torn vessel is not in the folds of the broad ligament (the latter would necessitate a laparotomy), do not incise, but make local applications of ice to the parts with pressure, hoping that the hemostatic influence of the ice and the pressure of the retained blood clot may control the hemorrhage and prevent its overflow into the abdomen, at least not to the extent reported by Cazeaux, where the clot extended as high as the short ribs back of the kidney, and under the liver. The escape of a large quantity of blood into the abdomen under such trying circumstances is one of the most serious accidents of the lying-in chamber.

Care should be exercised in examining a case of suspected concealed hemorrhage that the flow is not of this character, in order to avert a fatal termination. An early incision may give vent to the free escape of blood, and astringents, gauze packing and pressure may not control the bleeding as successfully as the accumulating blood clot itself. The mere pressure of the blood clot will offer but little resistance, as a rule, to the passage of the head through the pelvis, but will yield to pressure and diffuse itself throughout the tissues. Madam Lachapella has reported a case in which the thrombus commenced during labor and rapidly increased in size after the child's delivery. The obstruction to the escape of lochia became so great from the size of the hematoma as to give rise to a severe uterine hemorrhage somewhat later. In the effort to pass her hand into the uterus to empty it of the clotted blood, the tumor was involuntarily ruptured, when a large quantity of coagulated blood escaped and the alarming symptoms subsided.

Delivery should be effected promptly in all cases of hematoma, regardless of the location of the swelling. Forceps delivery of the head is to be preferred to turning, owing to the pressure influence it may have upon

the torn blood-vessel. Another consideration that must not be overlooked when contemplating the advisability of an early delivery is the relief given the local pressure stasis that is increasing the hemorrhage, and enhancing the danger.

The hemorrhage occurring in the labia attains a large size. The patient lies with her legs akimbo and usually in intense pain. The vessel is ruptured during delivery, but the swelling does not take place with sufficient rapidity to alarm the patient until some hours later, when the medical attendant will be sent for in great haste. The tumor should be carefully exposed and freely incised, the clots emptied out and the bleeding point secured; or, if this cannot be done, the wound should be firmly packed with gauze held in place by a large pad, or two or three retaining sutures placed so as to hold the packing and maintain pressure. Oozing still continuing, remove the gauze and saturate it with pure alcohol in preference to persulphate of iron, as the latter favors suppuration, and then repack the wound; or, before repacking, I have taken a large gauze or cotton swab soaked in equal parts of wood alcohol and water, hot as the parts will stand, and pass it into the cavity with seeming good results.

While looking after the local condition in these cases of severe hemorrhage, the general well-being of the patient must not be overlooked. If the loss of blood has been great enough to give rise to shock or in any way seriously compromise the patient, intravenous or subcutaneous injections of a normal salt solution must be given to replace the blood lost; morphine and strychnine, hypodermatically, to assist in maintaining the vital energy until such time as nature takes to plug the bleeding vessel.

GASTROENTEROSTOMY IN CARCINOMATOUS OBSTRUCTION OF THE PYLORUS.

By GILBERT GEOFFREY COTTAM, M. D.,

ROCK RAPIDS, IA.,

VICE-PRESIDENT IOWA STATE ASSOCIATION RAILWAY SURGEONS; MEMBER IOWA STATE MEDICAL SOCIETY, AMERICAN MEDICAL ASSOCIATION, INTERNATIONAL ASSOCIATION RAILWAY SURGEONS, WESTERN SURGICAL AND GYNECOLOGICAL ASSOCIATION, ETC.; SURGEON B., C. R. & N. AND C., ST. P., M. & O. RYS.

The operative treatment of pyloric carcinoma is practically limited to a choice of two procedures—pylorectomy and gastroenterostomy. The former, a radical operation contemplating the entire removal of the diseased tissues, has a high primary mortality despite greatly improved methods, and is contraindicated when invasion of the adjacent lymphatics has occurred. For this last reason alone it is infrequently performed, since but few cases are referred to the surgeon before the stage of lymphatic involvement.

Gastroenterostomy, on the other hand, is undertaken for a purely palliative effect, the relief of symptoms. It has a small primary mortality and is indicated in the later stages of the disease when the symptoms of stagnation of stomach contents become prominent and the patient grows weaker from malassimilation and the inability to retain food.

The two cases of which I am about to relate the histories are instances wherein I performed gastroenterostomy solely for the relief of the symptoms due to carcinomatous obstruction of the pylorus. Both were extreme cases, giving no hope of prolonged benefit from the operation. Enough features of interest developed during their progress, however, to warrant a brief recital of their salient points in connection with the theme of this paper, the object of which is to advocate the feasibility of performing gastroenterostomy even in the advanced degrees of pyloric carcinoma.

CASE I.—*Obstructive carcinoma developing in the cicatrix of an healed pyloric ulcer; gastroenterostomy fol-*

lowed by double pneumonia; death four weeks after operation.—Mrs. H. D., aged 44, born in Germany. Her father and paternal grandmother had epitheliomata(?) of the face, her son, aged 16, has a suspicious-looking growth on the nose, increasing gradually in size. As a girl she was healthy, but after puberty was not strong, suffering at times with severe attacks of indigestion. In 1896 the stomach symptoms began to increase in frequency and intensity, dull, constant burning in the epigastrium being pronounced. About the first of October, 1899, there was a sharp attack of hematemesis, which, in conjunction with previous gradual emaciation and increased anemia, made her very weak, though still able to be on her feet part of the time. She walked in a bent-over attitude, pressing both hands firmly on the epigastrium to control the pain. She vomited frequently and suffered from nausea almost constantly. Her condition became pitiable.

About three weeks after the attack of hemorrhage I saw this patient in consultation with her family physician, Dr. O. B. McKinney, of George, Ia., and, on the basis of the clinical history and determining the presence of an ill-defined tumor in the epigastrium, we arrived at the conclusion that the case was one of pyloric carcinoma.

The operation took place one week later, with the assistance of Dr. McKinney and Dr. J. A. Carter, of Ellsworth, Minn. The median incision having been made, the stomach was readily found and identified. At the upper aspect of the pylorus was discerned a hard growth about the size of an English walnut, firmly adherent to the left lobe of the liver. This being separated it was seen that the pyloric outlet must be considerably encroached upon by the growth and that the lymph-nodes of the gastro-colic and gastro-hepatic omenta were extensively involved, deciding at once the impracticability of pylorectomy and the necessity for establishing another outlet. Anterior gastroenterostomy by the method of Wolfler as modified by Rockwitz was then performed in the following manner: Having pulled the greater omen-

tum over to the right, as advised by Jessett, the jejunum was found by using the pancreas and transverse mesocolon as guides, then turned over so that its peristaltic movements would correspond in direction with those of the stomach. Both having been drawn well out of the wound and clamps applied to the jejunum, three-inch incisions were made in each and a single suture placed and tied in each angle to hold the edges in apposition, while a continued suture of fine silk was applied through all the coats, followed by Halsted mattress sutures through the peritoneal-fibrous coat only.

There was but little resultant shock. The patient was watched closely for signs of peritonitis, but none appeared; in fact there was prompt relief of all distressing symptoms referable to the abdomen. Salines operated freely on the third day and liquid nourishment was taken with relish. Double pneumonia, however, set in shortly after the operation, whether from exposure, inspiration of stomach-contents during the anesthesia or from infection can not be definitely stated, but from whatever cause it proved fatal nearly one month after the operation.

A post-mortem examination of the operative field was permitted. The parts appeared very much as left at the termination of the operation. There was no evidence of infection or of inflammatory reaction, in fact firm union between the approximated peritoneal surfaces at the site of the gastroenterostomy had occurred without permitting any leakage. The opening between the stomach and bowel had contracted slightly and the pylorus had again become adherent to the liver. I removed the pyloric half of the stomach and duodenum, with the attached segment of jejunum, and sent the specimen to Dr. E. F. Tiedemann, of St. Louis, for pathological examination. In his report Dr. Tiedemann states that the specimen showed complete obstruction of the pylorus by cancerous infiltration, microscopical sections of the growth showing to be a carcinoma of the scirrhus variety. Near the pylorus was a large cicatrix—evidently a healed ulcer—and this was continuous with

the tumor, demonstrating the origin of the latter in the former. Examination of the omental lymph-nodes gave a typical carcinoma picture.

CASE II.—*Obstructive carcinoma* (?) *of the pylorus, of unusually rapid development; gastroenterostomy; death from exhaustion.*—William M., aged 64, farmer, of good family history, had invariably enjoyed rugged health until about nine weeks before I saw him for the first time. A hard-working man, he had never experienced the loss of a single day's work by illness of any kind. His first admonition of anything wrong was a slight tendency to retch an hour or so after eating. This increased, gradually merging into vomiting. At first the bowel movements were regular, then constipated, and lastly there was no evacuation for over a week. Pain was conspicuously absent from first to last. There was a mild sensation of oppression in the epigastrium, hardly noticeable. Emaciation and anemia progressed rapidly. He became much debilitated, and realizing the existence of a grave condition went at the eighth week to Dr. Morse's hospital at Eldora, whither I was called to see him in consultation with Dr. Morse and Dr. Clark, of Grinnell. He was then being fed on nutritive enemata, the stomach (much dilated at times) refusing to retain even small amounts of liquids. Lavage twice daily had been practiced for a week previously with temporary benefit. Physical examination developed the existence of dullness in the epigastrium, with but the suspicion of a tumor. There was, however, a feeling of bogginess on deep pressure in that region. The stomach was markedly dilated; sometimes it could be seen plainly as inflated by the accumulation of gas. No signs of intestinal peristalsis could be detected either by sight, touch, or the phonendoscope. Analysis of a portion of the gastric contents showed absence of free hydrochloric acid. Uffelmann's test for lactic acid gave negative results. Although in all, the symptoms were of but nine weeks' duration we soon agreed on a diagnosis of pyloric obstruction, probably cancerous, and in view of the severity of the symptoms and the patient's condition immediate operation was deemed imperative. On

opening the abdomen in the median line between the ensiform cartilage and the umbilicus the stomach presented. As predicted we found the pyloric outlet completely blocked, an infiltrating growth involving the entire circumference of the organ. There were no visceral adhesions. Below the jejunum the small intestines were collapsed, certain portions being of no greater diameter than that of an ordinary lead-pencil. Fortunately the jejunum was not so collapsed, so, after emptying it of what little secretion it contained, the clamps were applied and gastroenterostomy carried out as in the preceding case.

The patient lived about one week after the operation, his vitality being too low to admit of his assimilating nourishment and so adding to his well-nigh depleted stock of energy. The vomiting was promptly relieved and other distressing symptoms abated, but his strength proved inefficient.

In conclusion, I can only venture the hope that as our means of making an early diagnosis of pyloric carcinoma have become more certain so can we look forward to earlier opportunities to execute those procedures which are designed to mitigate suffering and prolong life in this formidable affection.

DISCUSSION.

DR. VAN BUREN KNOTT, of Sioux City, Ia.: The essayist has presented this subject in a comprehensive and able manner, and should be congratulated upon the excellent result obtained. In examining the specimen, I do not see how union could be improved upon by any method or by any operator. His remarks concerning pylorectomy and the reasons for not performing the operation should impress upon us the necessity of educating ourselves, as well as the public, to the fact that these cases should go to the hands of the surgeon earlier. I cannot help but believe that one reason for the large mortality attending pylorectomy is because the cases are submitted to operation as a last resort, and the disease has gone too far. I see no reason why an early operation for cancer of the pylorus, with thorough and extensive extirpation of the disease, should not be conducted with as good results as operations for cancer elsewhere. If these cases were referred to the surgeons earlier and submitted to operation, I believe the results would be greatly improved upon.

Einhorn, in a recent paper, stated among his conclusions that every case of malignant disease of the stomach should be operated upon immediately as soon as the diagnosis is

made. In an interesting paper by Dr. Bernays, he takes the same ground, that these cases should be operated upon immediately, and both are agreed as to the necessity of operating early.

As to the choice of operations, there are two well-recognized operative procedures performed for this condition,—the anterior, or Wölfler method, and the posterior, or von Hacker operation. It would appear that in some cases the posterior operation is the better. The condition for which we operate in gastroenterostomy is to relieve stagnation of the stomach contents, to establish an escape for these contents. The anterior operation is the easier, and consequently it has been more frequently resorted to where the patients were in an extreme condition, and where every moment of time was valuable. In talking over the subject with Dr. Bernays, he says that in his experience the posterior operation is as easy as the anterior. The stomach is to be well drawn out, and when this is done he finds it as easy to do the posterior as the anterior gastroenterostomy. I have never done but one posterior gastroenterostomy, and that I did with the aid of the Murphy button. The use of the Murphy button in these operations has been a question of much dispute. It has its adherents and opponents. Very many able surgeons advocate the use of the button where time is such an important element. There is no question that we can do the operation much quicker with the button than we can by suturing the divided ends of the gut. I believe it is Willy Meyer who, in a recent article, advocates using three sutures. He uses the Czerny suture first, then suturing through the serous and subserous coats, and around all another Lambert suture, turning in the two layers already applied. He mentions one other point of considerable value, namely, after having established the anastomosis, it is wise to suture to the wall of the stomach externally three or four inches of the proximal end of the duodenum, in order that no kink may occur in the bowel beyond the anastomosis, which favors the retention of bile in the stomach. He claims to have done this in several cases with good results.

Dr. A. C. Bernays, of St. Louis, Mo.: I congratulate the essayist on the fine results he has achieved. I congratulate him, furthermore, on the courage he has displayed in doing this class of work in the country where he has not the advantages of a hospital and all its paraphernalia. The specimen shows that he obtained excellent results, such as cannot be surpassed, so far as union between the two hollow intestines is concerned. Union is perfect, and the hole is patulous. I do not wish to criticise the doctor for doing the anterior operation, because I have done it very many times myself. I believe, however, that an operation on the posterior surface of the stomach is more physiological; the contents are more liable to be thoroughly drained from the stomach cavity than by resorting to the anterior incision. But if the anterior incision is made any more than an inch and a half away from the greater curvature, I believe the stomach contents will be pretty well drained in that way. I have seen anterior gastroenterostomies followed by excellent re-

sults. The distressing symptom of vomiting from regurgitation of the duodenal contents is met with mostly in those cases where there is not complete stenosis at the pylorus. We can never tell before operation exactly how much stenosis there is at the pylorus. Furthermore, after a gastroenterostomy a tight stenosis of the pylorus often becomes patulous for the simple reason that the pylorus is given rest, and under the influence of rest we know that all manner of swellings decrease in size. Nature has a great tendency to stop the growth even of malignant tumors. Nothing is more certain, for instance, than that a cancer of the rectum, before a colotomy, will grow rapidly under the irritation produced by constant passage of feces through the cancerous stricture. After a colotomy, no less a person than Watson Cheyne speaks of a case of cure. He says he is convinced that what he thought was a cancer before the operation simply disappeared. Of course, we cannot believe it was a cancer; it must have been an error in the diagnosis, and the obstructing tumor was probably a gumma. But putting the rectum at rest by a colotomy, the amelioration is much greater than we would expect; it nearly always takes place, and the same is true of a pyloric tumor after gastroenterostomy. It is a fact that I can testify to, from having made a second laparotomy after a gastroenterostomy in one case of pyloric cancer, that the mass had decreased, and that the enlarged nodes had disappeared around the gastro-colic omentum.

Again, I desire to congratulate the doctor on his fine work, and I hope he will continue, because his work has been successful. Nothing stimulates a young surgeon so much as success.

DR. COTTAM (closing the discussion): I have very little to add in my closing remarks. With reference to the remarks of Dr. Knott, that these cases should be operated upon as soon as the diagnosis is made, I fully agree with him. The only trouble is that these patients do not consult a surgeon in time to be operated on when they should be. The first set of symptoms throws the average general practitioner off the track, and the consequence is the disease gets a good start before the surgeon obtains an opportunity to operate. In my second case, as I remarked, the symptoms were only of nine weeks' duration; prior to that the man had been in the best of health; this, however, is an uncommonly rapid course.

With reference to the use of the Murphy button versus the suture, I am much opposed to using a button in gastroenterostomy for two reasons. One is that an opening of less than three inches in a gastroenterostomy is simply an aggravation, and if you put a three-inch button inside, you may just as well put in a cannon-ball. Then there is the chance of having the button fall back into the stomach. Several cases have been reported where this has occurred, and there are many more cases which have not been placed on record. I believe an attempt has been made to obviate this by some surgeons. Senn, I think, attaches a piece of gauze to the intestinal half of the button so as to cause dragging in that direction by the peristaltic movements of the intestine.

Wylie, of New York, has tried attaching a thread with a shoe-button on the end, but his patient died, before the result could be determined, of leakage.

In regard to the question of the relative merits of the anterior and posterior gastroenterostomies, I consider the posterior operation the preferable one, inasmuch as gravity aids the discharge of the stomach contents into the bowel, and it is no more difficult; but quite a number of cases have been reported of kinking of the bowel following the posterior operation, and on that account I have not resorted to it. Possibly it is a coincidence, but I prefer to pin my faith to the anterior operation.

CONSTITUTION.

NAME AND OBJECT.

1. The name of the Association shall be the Western Surgical and Gynecological Association.

II. Its object shall be the promotion and diffusion of knowledge in whatever pertains to Surgery and Gynecology, in the broadest sense of the terms.

MEMBERS.

III. The members of the Association shall consist of active members and honorary members.

The active members shall consist of such members of the profession (regular) who reside in the Western States and Territories, who are practicing Surgery or Gynecology as specialists, or who are limiting their practice largely to these branches, or are desirous of doing so.

Candidates shall be proposed to the Executive Council by two members, and, on recommendation of the Executive Council, shall be balloted for at the annual meeting.

A two-thirds vote in the affirmative of all the members present shall be necessary to elect; ten members, at least, being in attendance.

The honorary members shall consist of such distinguished specialists in Surgery or Gynecology who do not reside in the jurisdiction of the Association as hereinafter provided.

It shall be the privilege of each active member to recommend one honorary member, who shall be elected in the same manner as active members. They shall enjoy all the privileges of active members, ex-

cepting to vote or hold office, and shall not be required to pay any fee.

OFFICERS.

IV. The officers of this Association shall be a President, a first and second Vice-President, a Secretary-Treasurer, and five Executive Councillors.

The nomination of all officers shall be made by the Executive Council and submitted to the Association for final action and election.

The officers shall enter upon their duties immediately before the adjournment of the meeting at which they were elected, and shall hold office for one year.

The retiring President shall be a member *ex officio* of the Executive Council, and its chairman for one year, and shall remain a member for three years. All the other members of the Executive Council shall be elected annually in the same manner as are other officers.

Any vacancy occurring during the interim may be filled temporarily by the Executive Council.

ANNUAL MEETINGS.

V. The time and place of holding the annual meeting shall be determined by the Association each time before adjournment, or in case of failure, the Executive Councillors shall fix time and place.

It shall continue two days unless otherwise ordered by vote of the Association.

AMENDMENTS.

VI. This constitution may be amended by a two-thirds vote of all the members present at the annual meeting; provided that notice of the proposed amendment has been presented in writing at the annual meeting next preceding, or shall have been printed in the notification of the meeting at which the vote is to be taken.

BY-LAWS.

THE PRESIDING OFFICER.

I. The President, or in his absence the first Vice-President, and in his absence the second Vice-President, shall preside at all meetings, and shall perform such other duties as ordinarily pertain to the chair.

The presiding officer shall be *ex-officio* Chairman of the Executive Council, but shall vote therein only in case of tie.

SECRETARY-TREASURER.

II. The Secretary-Treasurer shall attend and keep a record of all the meetings of the Association and of the Council, of which latter he shall be *ex-officio* Clerk, and shall be entitled to vote therein.

He shall collect all moneys due from the members, and shall pay all bills and render an account thereof at the annual meetings, when an Auditing Committee shall be appointed to examine his accounts and records.

He shall supervise and conduct all correspondence of the Association; he shall superintend the publication of the transactions under the direction of the Executive Council, and shall perform all the ordinary duties of his office.

He shall be the custodian of the seal, books, and records of the Association.

EXECUTIVE COUNCIL.

III. The Executive Council shall have the management of the affairs of the Association, subject to the action of the members at its annual meetings.

The President, or any three members of the Executive Council may call a meeting, and a majority shall constitute a quorum.

It shall have the control of the publications of this Association, with full power to accept or reject papers or discussions.

It shall control the arrangements for the annual

meetings, and shall determine the order of the reading of papers.

It shall constitute a court of inquiry for the investigation of all charges against members for offenses involving honor or law, and shall have the sole power of moving the expulsion of any member.

PAPERS.

IV. The titles of all papers to be read at any annual meeting shall be furnished to the Secretary not later than one month before the first day of the meeting.

No title of a paper shall be placed on the program unless the author be a member in good standing of this Association or shall have made application for membership and paid the admission fee.

No paper shall be read before the Association that has already been published, or that has been read before any other meeting.

Not more than twenty minutes shall be occupied in reading any paper before the Association, without the unanimous consent of the members present.

All papers read before the Association shall become its sole property if accepted for publication; and the Executive Council may decline to publish any paper not handed to the Secretary complete before the final adjournment of the annual meeting.

QUORUM.

V. The members present shall constitute a quorum for all business, excepting the admission of new members or acting upon amendments to the Constitution, when not less than ten members must be present.

DECORUM.

VI. No remarks reflecting on the personal or professional character of any member shall be in order at any meeting, except when introduced by the Executive Council.

FINANCE.

VII. Each member on initiation shall pay a fee of $10, which shall include his dues for the first year.

Every member shall pay in advance the sum of $5 annually thereafter.

Any member neglecting to pay his annual dues for two years shall forfeit his membership.

No member shall receive the current volume of transactions unless his dues for that year have been paid.

The Secretary-Treasurer shall receive annually, for the services he shall have rendered the Association, such sum as may be fixed at the annual meeting.

ATTENDANCE.

VIII. Any member who shall neither attend nor present a paper for two consecutive years may, unless he offers a satisfactory excuse, be dropped from membership, upon vote of the Executive Council.

RULES.

IX. "Roberts' Rules of Order" shall be accepted as a parliamentary guide in the deliberations of the Association.

ORDER OF BUSINESS.

X. General meeting at 10 o'clock A. M.

a. Reports of Committee on Scientific Questions.

b. Reading of papers and discussions of the same.

The business meeting shall be held at 8 o'clock P. M. on the first day of the session (unless otherwise ordered by vote), at which only the members of the Association shall be present. The Secretary-Treasurer's records shall then be read and his accounts submitted; the report of the committees on other than scientific subjects offered; and all miscellaneous business transacted.

AMENDMENTS.

XI. These by-laws may be amended by a two-thirds vote of all the members present at any meeting; provided previous notice in writing has been given at the annual meeting next preceding, or shall have been printed in the notification of the meeting at which the vote is to be taken.